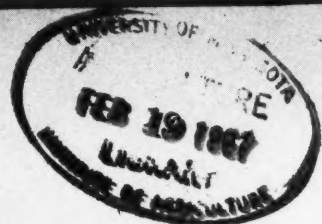


Farm Chemicals

Pioneer Journal
of the Industry



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Control
with EPTC . . . 44

Pesticide
School 48

Root Knot
Control 49

Mississippi
Conference . . . 52

Fort.
Conference . . . 53

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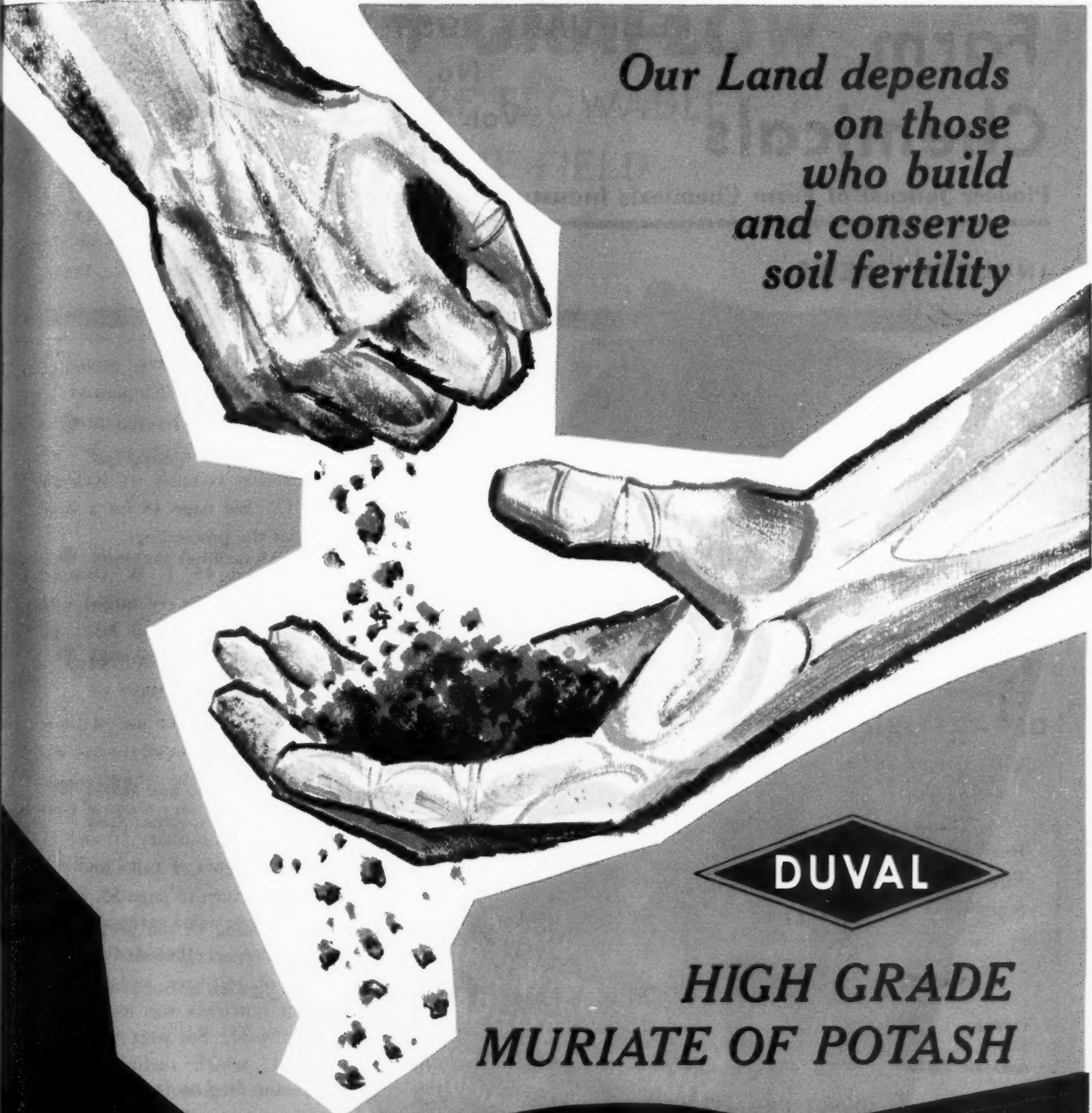
That's why Chase supplies Multiwalls in such wide variety, in so many types and constructions . . . why the many Chase options—in papers, tapes, sewing—permit precise, money-saving selection.

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Farm Chemicals

FEBRUARY, 1957

No. 2

Vol. 120

Pioneer Journal of Farm Chemicals Industry, Est. 1894

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In this issue . . .

EPTC, a new herbicide developed by Stauffer Chemical Co., is reported to have yielded excellent weed control on many crops. Photographs showing test results on several crops are included with an article on the experimental chemical, beginning on page 44.

Latest research data and recommendations were presented to the more than 200 persons enrolled at the North Carolina State College Pesticide School, in session recently at Raleigh, N. C. See page 48 for a summary of the proceedings.

On page 45, T. W. Graham reports on tests conducted with Vapam, Mylone and N521 for weed and root knot control in tobacco plant beds.

A much greater use of phosphates in boll weevil control was predicted at the third annual Mississippi Insect Control Conference, held January 10 and 11. For highlights of talks and discussions, turn to page 52.

According to the preliminary USDA report, 1955-56 consumption of fertilizer and primary plant nutrients was lower than in 1954-55. See page 53 for the report, which includes tables showing regional consumption of fertilizer and plant nutrients.

Cover story

In keeping with our article on EPTC and the recent North East Weed Control Conference, we illustrate a typical scene showing chemical application for pre-emergence weed control on corn. This coming Spring many farmers will be taking advantage of this benefit available to them by utilizing many farm chemicals in their operation in addition to herbicides.

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FEBRUARY, 1957

Business & Management

... News of the Industry

NPFI 'Looks with Disfavor' on P, K

The National Plant Food Institute's executive committee has adopted a resolution which "looks with disfavor" on a proposed change in reporting phosphate and potash content of fertilizers in the elemental rather than oxide form.

Action by the committee was taken following a poll of the mem-

bership. Institute members were asked whether they favored, opposed or were neutral to the proposal of "changing the expression of P_2O_5 and K_2O to P and K, respectively."

The poll revealed that, of those reporting, 67 per cent were opposed to changing the present method of reporting, 17 per cent favored the proposed change and 16 per cent favored a neutral position.

Pacific Agro Company Formed

The newly formed Pacific Agro Co. began business in Seattle, Wash., on January 2, specializing in trace element fertilizers and home garden plant foods. The firm reports it also will mix and sell a complete line of insecticides.

President of the new firm is R. W. Cool of Tonasket, Wash., where he heads Agro Minerals, Inc., manufacturers of gypsum and epsom salts. Robert H. Allard, formerly with Wilbur-Ellis Co., is vice president and general manager, and has direct charge of the farm chemical division. Lee Fryer, formerly with Chas. H. Lilly Co., is vice president and manager of the plant foods division. Fryer will continue his long-established work

in research and product development for the Pacific Northwest farm and garden market.

Link Distributing Co. of Grandview, Wash. and Shur-Crop Corp. of Monroe, Wash., are handling manufacturing for the new firm, and are serving as market bases for pesticides and fertilizers produced by Pacific Agro.

Directors, in addition to Cool, Allard and Fryer, include M. V. Wolfkill, president of Shur-Crop; Alex Bleyhl, pres. and Ray Whitcomb, gen. mgr. of Bleyhl's, Inc. and Link Distributing; Charles Gelb, pres. of Spokane Garden Store; and J. D. Ehrlichman of Hullin and Ehrlichman, Seattle law firm.

R. W. Cool



R. H. Allard



Lee Fryer



LA Plant Sets Safety Record for Am. Potash

American Potash & Chemical Corp.'s Los Angeles plant recently completed three years without a lost-time accident, the longest no-accident record ever set by one of the firm's facilities.

To commemorate the event, a dinner party was held, attended by about 60 employees of the Los Angeles plant, at which a plaque was presented to participating personnel by Russell Sunderlin, plant manager.

Major contributions to the safety record have been made in recent years by AP&CC's safety education program, safety-promoting activities of the plant union, and a modernization plan at the Los Angeles plant, the firm reports.

New Fisons Plant

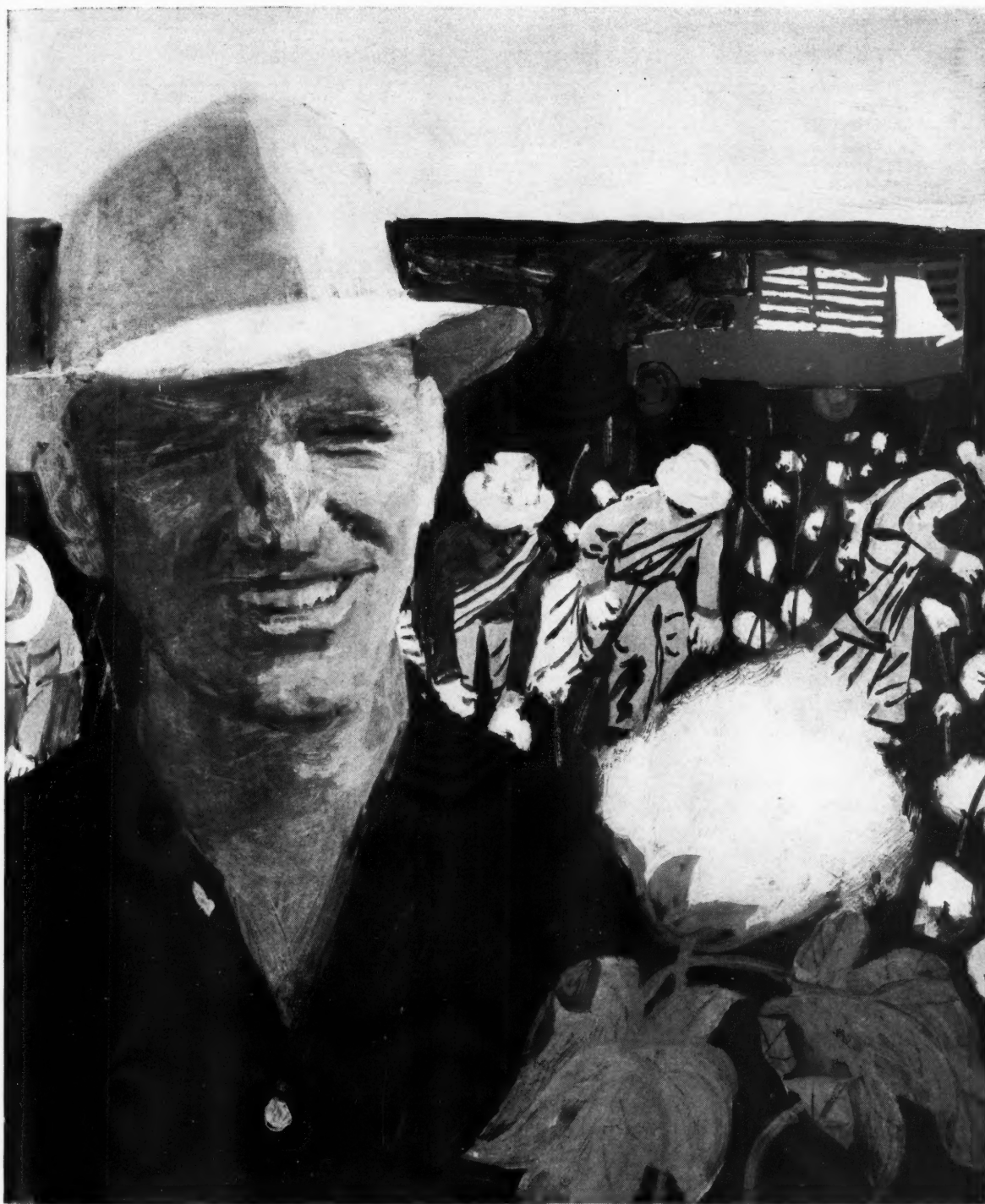
Fisons Limited, Felixstowe, Suffolk, England, have awarded a contract to Chemical and Industrial International, Ltd. of Nassau, Bahamas for construction of a 250 ton per day nitric acid plant to be built at their facilities at Stanford-le-Hope on the Thames estuary. The plant was designed by The Chemical & Industrial Corp. of Cincinnati, O.

It is a single unit high pressure nitric acid plant, the second of its type furnished recently in Europe.

US Borax Leases NYC Offices for 3 Divs.

In a move to bring together the offices of its several divisions, United States Borax and Chemical Corp. has leased the 8th and part of the 9th floors of 50 Rockefeller Plaza, New York City.

The offices will be headquarters for Pacific Coast Borax Co. and United States Potash Co. Divisions and the Eastern sales office of 20 Mule team Products Div. The offices are expected to be ready for occupancy about June 1.



POTASH RAISES FARM INCOME. The successful American cotton grower. He's learned the evils of weevils and beaten 'em with the best modern dusts and sprays. He takes good care of his soil, too. Every year he uses well-balanced fertilizers to replenish the potash in his soil—and every year he comes up with the biggest, healthiest cotton crop around. He has no more luck than his neighbors. Just more foresight.

USP's Higrade muriate of potash is free-flowing and non-caking and has the highest K_2O content—62-63% K_2O . USP's Granular muriate of potash is also available and contains a minimum of 60% K_2O .

UNITED STATES POTASH COMPANY

DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION
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Office: Rhodes-Haverty Building, Atlanta, Georgia.



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. . . Business & Management

Richfield Chem. Builds Fert. Plant

Property has been obtained by Richfield Chemical Co. and contracts made for building a complete-analysis liquid fertilizer plant at Sycamore, Ill. According to its president, Howard F. Kahn, the 200 ton-per-day plant will be completed and in operation by mid-March.

The plant will manufacture and stock a few standard ratios, and will custom-make innumerable other analyses to meet specific requirements of the farmer, said Kahn.

Richfield Chemical, a corporation organized a year ago, will be merged with an established corporation, to achieve a solid financial status, Hahn revealed.

Vice president of the firm is Jack von Mettenheim, formerly with International Minerals & Chemicals Corp. Fred Hoff is sales representative.

Nat. Potash Opens Sou. Sales Office

National Potash Co. has opened a southern sales office at 212 Bell Building, Montgomery, Ala., according to an announcement by William B. Porterfield, vice president and sales manager.

Fred C. Broadway has been named manager of the new sales office.

Methyl Parathion From Velsicol Chem.

Velsicol Chemical Corp. has announced that it will have technical methyl parathion available for the coming growing season.

According to J. F. Kirk, vice president in charge of sales, research results reported last month at the National Cotton Production Conference at Birmingham indicated that methyl parathion

will be widely used during 1957 to control boll weevils in areas where resistance has developed to BHC and other chlorinated hydro-carbon insecticides.

Agricultural Output Rises to New High

World production of crops and livestock rose to a new high level—120 per cent of prewar (1935-39)—in 1956-7, reports USDA. The level was 118 per cent in 1955-56 and 116 in 1954-55. The corresponding percentages for the Free World alone for those seasons were, respectively, 126, 125 and 122.

On a per capita basis, taking into consideration rising world population, production in 1956-57 is holding steady at 97 per cent of prewar for the third consecutive year. Free World per capita production is 100 per cent of prewar, and Communist area output is 91 per cent.

New Plant for Tenn. Farm Co-Op.

Tennessee Farm Co-Operative is reported to be building a new fertilizer and feed plant in Jackson, Tenn. The organization has acquired 45 acres of land for the plant, which will employ some sixty workers when placed in operation.

Incorporation

Delta Liquid Plant Food Co., Inc., Greenville, Miss., has been granted charter of incorporation to deal in fertilizer and farm equipment, listing capital stock of \$50,000.

International Research Center Established

An international agricultural research center is being set up by American Cyanamid Co. near Princeton, N. J., where world livestock and crop problems will be studied under conditions paralleling those in major agricultural nations.

The center will cooperate closely with main research laboratories of the firm in Pearl River, N. Y.

U.S. Borax Profits Up 13 Per Cent

An increase in profits of more than 13 per cent for the fiscal year ended Sept. 30 as compared to the like period in 1955 has been reported by United States Borax & Chemical Corp. in its first annual report to stockholders.

IBM 'Brain' Figures Fert. Formulations

Mathematical and chemical problems involved in formulating granular fertilizers are being solved for Monsanto Chemical Co. by an IBM 702 Electronic Data Processing Machine.

Under ordinary circumstances, Monsanto reports that at least two hours is required by one man for calculating each formulation. The "brain" recently calculated 1,650 such formulations in less than an hour—which figures out to be more than 19 months of work from an engineer with a slide rule, working 40 hours a week. Results worked out by the machine permit granular fertilizer manufacturers to compare various operating conditions, raw materials and production costs to select the most efficient combination.

Monsanto's Inorganic Chemicals Div. is making the IBM 702 formulation service available to customers through its Technical Service Dept.

BY RAIL OR WATER

*You Get It When
You Want It...*



TC
TENNESSEE CORPORATION

TRIPLE SUPERPHOSPHATE

*Fine Texture, Small Particle Size For Maximum
Ammoniation-Granulation*

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We also maintain our own docks on the Tampa Bay which enables us to ship by water to the four corners of the earth — whether by land or sea, you can be assured that your order receives our immediate attention, and it is on its way by the most expeditious route shortly after it is received.

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Through Six Basic Chemical and Physical Analysis

HIGH WATER SOLUBILITY
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Fine Texture, Highest Porosity, Large Surface Area, Small Particle Size, for Maximum Ammoniation-Granulation.

GRANULAR
Dust Free, Free Flowing, Uniform Particle Size, Medium Hardness, No Bridging Over, for Direct Soil Application.

COARSE
For Intermediate Ammoniation to Produce a Semi-Granular Product. Also Affords Excellent Compatible Mixing with Granular Potash, for Minimum Segregation, in Alkaline Grades.

There's a BRADLEY & BAKER office near you. Their representative would be pleased to consult with you on your requirements and to advise on your most convenient delivery routings.

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PRODUCTS**
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Now—for direct application . . .

*highest quality...
granulated triple super*



Just one trip across the field with this dustless, easy-to-handle, granulated 0-45-0 will make a repeat customer out of a trial user. Cash in now on spring sales.

Builds customer satisfaction and repeat sales

You'll like the compliments you'll get after your customers have tried your new 0-45-0 from International for the first time.

Look at typical comments from users of this high-quality triple:

"It sure goes on easy." (You bet it does! It's granulated for easy going through any fertilizing rig.)

"Pleasure to use." (Yes . . . and just one downwind trip across the

field will prove it to anyone . . . will build more repeat sales than a dozen sales talks.)

"Saves time and money." (Now your customers can avoid breaking up lumps in the bag or stopping in the middle of a field to kick a clogged-up rig. Easy to handle . . . just fill the fertilizer hopper and push off. Easy to put on.)

What's more, agronomists can

tell you the high availability of this superior product delivers results that build farmer satisfaction and repeat sales. The reason: special processing and manufacturing care produces a triple that resists reversion in the soil . . . supplies growing plants the phosphorus they need when they need it.

Call or write International today for samples and complete details.

free-flowing...top-performing
that sells itself on sight

*bagged under your own label...
shipped direct to your dealers**

Here's a new triple super you'll be proud to add to your own line of fertilizers... the new, granulated 0-45-0 from International Minerals and Chemical.

This superior triple can be shipped in bulk, or International will be happy to have it bagged in adequate quantities under your own label... ship direct to your own dealers, too, if you like.

Here's what this can mean to you:

- A top-quality triple super that carries your own private label and complements the rest of your line.
- A modern, easy-to-use, top-performing triple super that will bring you increased

customer satisfaction and plenty of repeat sales.

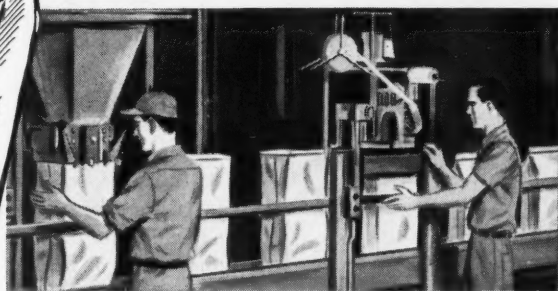
- The unbeatable convenience of distributing this high-quality product under your own brand name direct to your dealers without touching a single bag.

What's more, you'll find that dealing with International is a pleasure. You'll appreciate the friendly cooperation from International's transportation department... the fast service... and the reliability of supply.

See your International triple-super sales representative soon for complete details on minimum order requirements, price and delivery information. He'll be glad to show you samples. And one look at this new 0-45-0 will show you why you can't get a better deal than this new triple super now available for direct application sales.



**subject to minimum
order requirements*



Profit now from this superior 0-45-0. Bagged under your own brand name.

Superior texture of this new triple super, put up in your own bags, stores without caking. It's granulated for easy going through any fertilizer attachment.



PHOSPHATE CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

. . . Business & Management

Industry Firms Win Management Awards

The American Agricultural Chemical Co., Swift & Co., and Consolidated Mining & Smelting Co. of Canada Ltd. were among the 410 companies which won the American Institute of Management rating of Excellent Management for 1956.

Companies are rated by the Institute on every function of management. They are studied from the point of view of their economic justification as well as their treatment of shareowners, customers and the public, AIM reports.

Researchers Convert Bark into Soil Builder

Development of a method to convert bark into an inexpensive and unusually effective soil builder

has been reported by scientists at Armour Research Foundation, Illinois Institute of Technology.

In test conducted with greenhouse plants and field crops, the product was found to be more effective in promoting growth and improving the soil than either peat moss or a commercial soil conditioner.

In conjunction with fertilizer, the bark soil builder turns clay and sand into rich loamy soil in which plants grow at a surprising rate, according to Dr. C. Roland McCully, scientific adviser in the foundation's Chemistry and Chem. Engineering Research Dept.

McCully said the soil builder (1) loosens the soil and improves its moisture holding capacity, (2) serves as a base for fertilizer and (3) controls the rate at which the plants obtain their food from the soil.

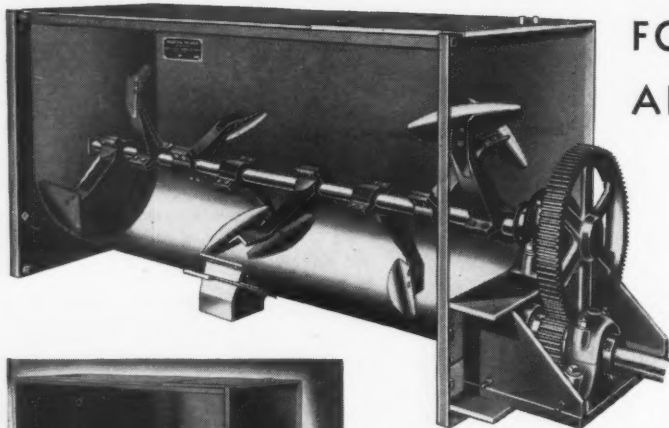
In producing the soil builder, bark is ground and tannin condensed by the addition of formaldehyde, followed by acidification with hydrochloric or sulfuric acid. The mixture then is heated for a brief period to complete the condensation process. Water and other excess chemicals are removed and the material is washed and dried.

More research is needed, said McCully, to select the most effective type of product and processing methods.

V. L. Rebak Named SAACI President

Vincent L. Rebak, New York district sales manager for Grace Chemical Co., was inducted late last month as 1957 president of the Salesmen's Association of the American Chemical Industry.

DOUBLE PROFIT... in FERTILIZER MIXING!



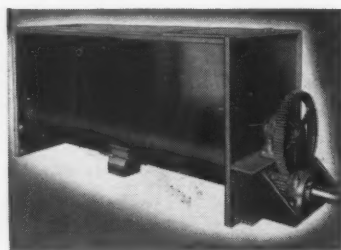
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MIXER!**

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ONE MIXER FOR ALL MIXING REQUIREMENTS

The Marion Mixer Mixes both dry and semi-wet materials giving you constant uniformity batch after batch.



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MARION, IOWA

FARM CHEMICALS



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FOR LOW-COST NITROGEN, LION is the brand. Lion Ammonium Nitrate is guaranteed to contain 33.5% nitrogen, which means lower-cost nitrogen for your crops... more for your money in bigger crop yields.

FOR MORE PRODUCTION, Lion Ammonium Nitrate contains TWO kinds of plant nitrogen. *Quick-acting* nitrate nitrogen that gets crops started fast... and *long-lasting* ammonia nitrogen that resists leaching and feeds your crops steadily during the important growing months that follow.

FOR EASIER SPREADING, Lion Ammonium Nitrate is in pellet form. These

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MADE BY WORLD'S LARGEST. Lion Brand Ammonium Nitrate is made by Monsanto Chemical Company, world's largest producer of prilled ammonium nitrate—and *your* most reliable source of *low-cost* nitrogen. Save money. Buy *Lion!*

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GROW MORE PROFITABLY... Weed Killers
Brush Killers • DDT and Parathion
Insecticides • Medo-Green® Silage Pre-
servative • Phosphates (Liquid and Solid)



MONSANTO CHEMICAL COMPANY • ST. LOUIS 1, MISSOURI

FEBRUARY, 1957

. . . Business & Management

CFA Opposes Change In Fert. Guarantees

The California Fertilizer Association last month went on record as opposing the proposed change in fertilizer guarantees from the oxide to the elemental basis on phosphorus and potassium.

The Association's board of directors, by a vote of 11 to 1, took this action on January 11 at a meeting held in Los Angeles.

Dow Broadcasts Sales Meeting

An innovation in sales meetings has proven a big success for its Agricultural Chemical Sales Dept., reports Dow Chemical Co. The department employed a closed circuit broadcast over

ABC radio network to outline sales support to distributors.

The broadcast was heard by more than a thousand distributors and their salesmen at 35 meetings in ABC-affiliated radio stations over the country. Local meetings were chairmanned by district salesmen.

Donald Williams, Dow vice president, opened the program and W. W. Allen, agricultural chemical sales manager, acted as moderator. Glen Gullikson, manager of farm use chemical sales, and Howard Sheldon, merchandising manager, explained national and regional advertising support and point-of-purchase sales aids planned for the year.

Following the national hookup, district salesmen took over local meetings to outline regional sales plans.

AAC Plants Set New Safety Records

New safety records were reported in January at three plants of The American Agricultural Chemical Co.

The Spartanburg, S. C. plant has had no lost time injuries for the fourth year in a row. Plants at Savannah, Ga., and North Weymouth, Mass., have each completed one year with no lost time injuries, AAC announced.

Dividend Declared By Nat'l Distillers

The board of National Distillers Products Corp. has declared a quarterly dividend of 25 cents a share on the company's common stock, payable March 2 to shareholders of record Feb. 11.

CALL ARMOUR
greatest name in fertilizers

**READY TO
SERVE YOU WITH**

31 factories
and offices

**PHOSPHATE ROCK • TRIPLE SUPERPHOSPHATE
SUPERPHOSPHATE • SHEEP MANURE**

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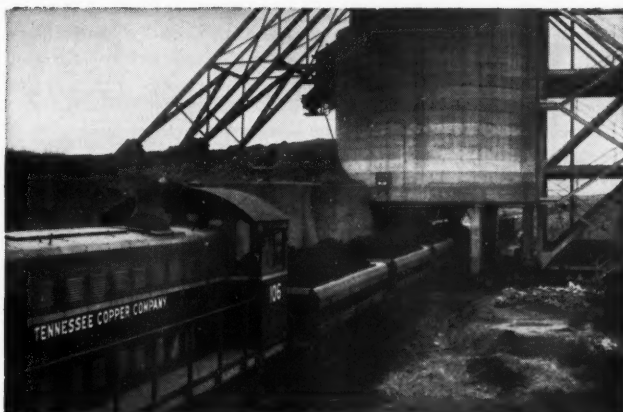


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Including:

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- ▶ **MANGANOUS OXIDE**
- ▶ **COPPER SULFATE**
- ▶ **ZINC SULFATE**
- ▶ **IRON SULFATE**
- ▶ **MINERAL MIXTURES**



- YOU** are assured a consistent basic source of quality materials.
- YOU** cut costs with combined carloads from one basic source.
- YOU** can save money, time, plant space and effort through the use of our custom formula mineral mixture service.
- WE** back up our products with service, research and technical assistance.

Over 30 years experience in nutritional trace element manufacture, research and application to mixed fertilizers

For further information please make requests on your company's letterhead.

TENNESSEE



CORPORATION

617-629 Grant Building, Atlanta, Georgia



. . . Business & Management

Four New Eng. Firms Form Hubbard-Hall Co.

Merger of four New England farm chemicals firms was effected Jan. 1, 1957. Involved are Apothecaries Hall Co., Rogers & Hubbard Co., Woodruff Fertilizer & Chemical Works, Inc., and Old Deerfield Fertilizer Co.

Name of Apothecaries Hall Co., the surviving corporation, has been changed to The Hubbard-Hall Chemical Co. The merger gives the new company four fertilizer factories, located at North Haven, Portland and East Windsor, Conn., and South Deerfield, Mass. Warehouses for the handling of agricultural and industrial specialties will be maintained at other points.

Directors of the corporation are William L. Bradley, Clarence F. Clark, Stanley M. Cooper, B. B. Fall, Chauncey P. Goss, Harlan H. Griswold, Edward R. Jones, Frederic R. Kellogg, James R. Rossman, J. Warren Upson, Levi Wilcox and Samuel P. Williams, 3rd.

Officers elected by the directors at their meeting on Jan. 2 include Frederic R. Kellogg, pres.; Edward R. Jones, exec. vice-pres. and treas.; B. B. Fall and James R. Rossman, senior vice-pres.; Frederick S. Foster and John Sanford, vice-pres.; E. S. Davis, Jr., secty. and asst. treas.; Arthur F. Kingsbury Jr., Everett D. Marvin Jr. and T. Z. Voyda, asst. vice-pres.; W. H. Stahl, asst. secty. and Benjamin S. Douglas, asst. secty. and traffic mgr.

Move Monsanto Office

The district sales office for agricultural chemicals of Monsanto Chemical Co.'s Inorganic Chemical Div., which had been located at Des Moines, Iowa, was transferred to St. Louis on Jan. 1. G. C. Kempson and W. O. Butler,

manager and assistant manager respectively for the office, will be located at 800 N. 12th Boulevard with other Monsanto district sales offices.

Top Execs, Production Earnings Up 5.9%

Compensation of top corporate executives increased 5.9 per cent, on the average, last year, according to the seventh annual survey of top management compensation just distributed by the Executive Compensation Service of the American Management Association.

Average weekly earnings of production workers in all manufacturing industries, as reported by the Bureau of Labor Statistics, also increased by 5.9 per cent between January, 1955, and January, 1956.

Corresponding average increases in annual compensation for other groups as reported by AMA were: For middle management, 5 per cent; for sales personnel, 3.5 per cent, and for engineers, scientists and other administrative and technical personnel, 8.6 per cent.

Dow Pres. Forecasts '57 Business Outlook

The business outlook for 1957, in the opinion of Dr. Leland I. Doan, Dow Chemical Co. president, is typified by high employment, high levels of production and intense competition with some flattening of the economic growth curve.

In an annual year-end statement, the Dow executive noted that many forces would be at work opposing each other strongly. "Disposable income will undoubt-

edly be higher than ever," he said. "On the contrary, governmental credit policies are likely to have a restraining influence on mortgage and installment buying."

Prices, on the average, he feels will hold about even or edge up slightly. Industry in general is feeling a profit squeeze as a result of increased cost, but the keenness of competition will tend to prevent other than selective price raises. "Dow anticipates substantially larger sales," Doan continued, "but we probably will be unable to hold net earnings at last year's level and we think most companies are in pretty much the same boat."

More DuPont Owners

E. I. duPont de Nemours & Co., Inc., was owned by 168,675 stockholders as of Dec. 31, 1956, an increase of 9,666 over those holding stock on Dec. 31, 1955.

DBL Modernizes Des Moines Facilities

A major modernization-improvement program at Diamond Black Leaf Co.'s farm chemicals plant in Des Moines, Iowa, is underway, according to Emil C. Gerdes, mid-west manager for the company.

In addition to doubling production capacity of the plant, the project will effectively enable the company to intensify and broaden its customer service activities, Gerdes said.

Warehouse facilities for handling raw materials and for finished products are being enlarged. The plan includes construction of a concrete building providing 6,000 square feet of floor space and eight storage tanks with combined capacity of 150,000 gallons.

The project also calls for installation of new and improved formulating, reactor, packaging and power-handling equipment.

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And they are your best assurance of increased volume and profits. These superior nitrogen compounds sell better on every point—they come in handy free-flowing granular form for easy hand or machine application, are always uniform in quality and completely dependable.

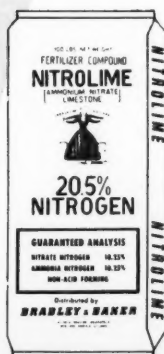
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PEOPLE

American Potash & Chem. Corp.



Hinyard

James N. Hinyard has been named director of market development, according to an announcement by Daniel S. Dinsmoor, vice president in charge of planning and development. Hinyard replaces Dr. A. J. Dirksen, recently named general sales manager of the firm's Industrial Chemicals Div.

ENGINEERING DEPT., TRONA PLANT. Myron W. Colony, former chief engineer, assumes responsibilities of advisory engineer to aid in long-range engineering planning and coordinate basic planning on major projects. James Jensen, former assistant chief engineer, is named manager, plant engineering, and Howard Barker, assistant manager, plant engineering. W. C. Henderson becomes plant engineer, and is succeeded as general foreman of maintenance of construction by A. L. Cartter.

American Potash has announced promotion of Henry DeArmond from assistant treasurer to administrative assistant.

Atlas Powder Co. New marketing manager of the Chemicals Div. is Bruce M. Bare. A graduate of Gettysburg College, Bare went to Atlas from Dewey and Almy Chemical Co., where he served most recently as marketing manager of the Organic Chemicals Div.

H. J. Baker & Bro. has announced retirement of William H. English, Jr. as a partner.

Battelle Memorial Institute. The Board of Trustees has ap-

pointed Dr. B. D. Thomas as the Institute's new director. A member of the Institute's executive and technical staff since 1934, Dr. Thomas was appointed assistant director in 1942. Subsequently, he was named secretary of the Battelle Memorial Institute Corp. and in July, 1955, he became vice president.

Bradley & Baker has named A. L. Wigger as a field salesman



Wigger

to be based in their St. Louis office. Wigger formerly was associated with Olin Mathieson Chemical Corp. and the Agricultural Chemicals Div. of Pittsburgh Coke & Chemical Co.

California Spray-Chemical Corp.

William W. Thomas, with the firm for 33 years, was honored recently at a retirement luncheon. Since joining the firm in 1923 as a salesman, Thomas has served as district manager, eastern division manager, manager of the overall marketing department and in 1949 became assistant to the president on market and product development.

Chase & Co. Arthur M. Mohler, former vice president of Lebanon Chemical

Corp., has been named manager of the Chase & Co.'s Fertilizer Div. He brings to the company 20 years experience in production, sales and application of farm chemicals.



Mohler

Davison Chemical Co., Mixed Fertilizer Div. Newly appointed agronomist and sales promotion manager is Perry O.

Onstot. He has been transferred from the Joplin branch office to the Baltimore headquarters. A graduate of the Missouri Univ. College of Agriculture, Onstot has been for four years instructor of vocational agriculture and supervisor of Veterans on the Farm Training in Missouri.



Onstot

Diamond Alkali Co. Promotion of Arthur B. Tillman from assistant works manager-operations at Painesville to the newly-created position of Electro Chemicals Div. operations manager is announced by Frank Chrencik, general manager of the division.

Fred J. Balzarini has been named to the new position of assistant general purchasing agent. He will be concerned chiefly with purchases of containers and raw materials as well as certain departmental administrative functions.

Another new position, that of assistant director, commercial development, has been formed by Diamond Alkali, and will be filled by Dr. U. T. Greene. Dr. Greene takes over his new responsibilities following six months' leave of absence for service as director of the Chemical and Rubber Div., Business and Defense Services Adm., U. S. Dept. of Commerce.

Diamond Black Leaf Co.

Emil C. Gerdes is appointed manager of commercial products, replacing Dr. James M. Merritt, who has resigned. Gerdes had been mid-western manager of DBL since December, 1955,



Gerdes

FARM CHEMICALS

... Business & Management

CCC to Design Japanese NH₃ Plant

Asahi Chemical Industry Co., Ltd., said to be one of Japan's leading chemical manufacturers, is reported to have plans well advanced for construction of a new ammonia plant at Noboeka, Miyazaki-ken on Kyushu Island.

Chemical Construction Corp. has announced that it will design the plant, which will have a capacity of 50 metric tons per day, utilizing the Texaco oil gasification process.

Smith-Douglass Adds to Nutro Line

Nutro Soil Corrector, a combination of plant food elements with neutralizing qualities for sour and mineral deficient soils, was added to the Nutro family of home and garden plant foods on Jan. 1, Smith-Douglass officials have announced.

Nutro is also now packaging its liquid plant food, Nutrolene, in gallon jugs. For the 1957 sales season, Nutro plant food pellets, Nutro rose food and Nutro Azalea-Camellia, will be packaged in five pound bags. Package sizes now include 5, 10, 25, 50 and 100 lb.

Conn. Reports On Fungicide Vapors

Experiments at the Connecticut Agricultural Experiment Station show that vapors of some fungicides effective against soil-inhabiting fungi are highly toxic to specific species of Rhizoctonia, Botrytis, Fusarium and Thielaviopsis.

Ceresan M and o-nitrochlorobenzene (25 per cent active) were highly effective in a volatile state against all the fungi tested. Pentachloronitrobenzene (75 per cent active) was moderately effective

against Botrytis cinerea and Rhizoctonia solani, but not against Fusarium or Thielavia basicola. Captan, Puratized Agricultural Spray, chloranil, and some experimental materials were partly effective against one or more of the fungi. Thiram and other dithiocarbamates were inactive. All fungicides tested which are commonly used as soil fungicides act to some extent in a volatile state.

Stauffer Granted Vapam Patent

Vapam has been granted a patent dealing with its temporarily sterilizing the soil. Manufactured by Stauffer Chemical Corporation, the patent number is 2,766,554.

Record Sales & Profits for Diamond

Record sales and earnings in 1956 are reported by Diamond Alkali Co., on the basis of unaudited figures.

Sales climbed to \$121,250,000, representing an increase of 10 per cent over the 1955 total of \$110,292,280, the previous record peak.

Net income totaled \$10,380,141, or \$3.83 per share, up 23 per cent over 1955 income. Earnings for 1956 included a special deduction of \$.28 per share reflecting accumulated losses since March, 1955 of Diamond Black Leaf Co., an unconsolidated affiliate.

Commenting on the future outlook, Raymond P. Evans, chairman and chief executive officer of the firm, declared that "providing general business activity continues at its present rate and in view of our present expansion-modernization program, we look forward to another year which should add further impetus to our steady growth in both organic and inorganic chemicals."

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CaO 58.07
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Superior for Dehydrating,
Neutralizing, and Curing
factors in the preparation of
effective fertilizers.

PROMPT SHIPMENTS

Three railroads serve our
Carey, Ohio, plant -
assuring prompt delivery-
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We Also Produce
DOLOMITIC
HYDRATED
LIME (165 TNP)
and
KILN DRIED
RAW DOLOMITE
(107 TNP)
Screened to size

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COMPLETE
INFORMATION
TODAY -
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The NATIONAL
LIME and STONE CO.
General Offices
FINDLAY, OHIO

... People

when the firm purchased the Des Moines pesticide plant of Geigy Chemical Corp.

E. T. Doyle, for the past two years district manager of DBL's Western District Sales Office, died recently after a short illness.

Diamond Fertilizer Co. recently announced appointment of Charles Cervone as general sales manager.

Dow Chemical Co. Former president of Texas A&M College, Dr. David H. Morgan has been named director of college relations for Dow. Appointment of Arthur M. Griswold as manager of foreign operations on the executive research staff also was announced. Griswold has been section superintendent of Dowicide products for a number of years.

Food Machinery & Chemical Corp. Dr. Sherman K. Reed becomes assistant to the president of the new FMC Organic Chemicals Div., with responsibilities in research. He will locate at the divisions New York headquarters. Dr. Reed was formerly assistant director of the Research Dept. of FMC's Niagara Chemical Div.



Reed

Geigy Agricultural Chemicals announces the appointment of David H. Sparks as southeastern technical field representative. While attending Mississippi State College, he was employed by Geigy as a technical field assistant during the



Sparks

summer field seasons of 1953 and 1954. Prior to joining the Geigy organization this year, he was employed by Olin Mathieson Chemical Co.

Hercules Powder Co. Creation of the new post of toxicologist in Hercules Medical Dept. and appointment of Dr. John Paul Frawley of Washington, D. C. to fill it, was recently announced by Dr. Lemuel C. McGee, medical director. For the past seven years, Dr. Frawley has served with the Food and Drug Administration.

Kelly-Western Seed Div. Former Utah State Weed and Seed Supervisor Bernard R. Ellison has joined Kelly-Western. He will conduct field and laboratory research and quality control tests on the firm's agricultural products.

W. A. (Wally) McKay, previously with Acme Quality Paints, has joined K-W, where he will coordinate nationwide sales of PAX Crabgrass and Soil Pest Control.

Michigan Chemical Corp. Alfred G. Raufer, director of sales for the past five years, has resigned, effective Feb. 1.

Mid-South Chemical Corp. Maj. Gen. Ralph H. Wooten has retired, but will continue as a consultant to the firm, according to an announcement by Ellis T. Woolfolk. Wooten was one of the founders and first executive vice president of Mid-South Chemical Co., predecessor of Mid-South Chemical Corp.

Mississippi Chemical Corp. R. H. Fisackerly has been elevated to the position of general sales manager, made vacant by the recent death of Ward F. Seat. Fisackerly has been with MCC since its organization in 1948.

Monsanto Chemical Co., Inorganic Chemicals Div. A tech-

nical service group, including specialists in all phases of operation of fertilizer plants, has been formed as part of the division's agricultural chemicals sales organization. With William R. Bone as manager, the group consists of Robert W. Lassiter, S. D. Daniels, Dr. Edwin Roth, James M. Seymour, J. Howard McNeill and Nicholas L. Redding.



Bone

Bone, who previously was a technical service representative in the industrial sales department of the division, was with a fertilizer manufacturer before joining Monsanto in 1952.

National Potash Co. William P. Brashear has been named sales representative in the states of Texas, Louisiana, Oklahoma and Arkansas. A graduate of Texas A&M, Brashear will make his headquarters in Shreveport, La.

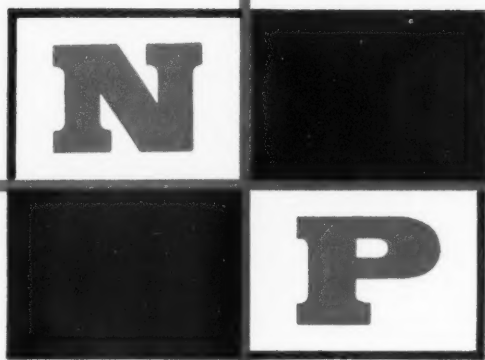
Transfer of William C. Boswell from the southwestern territory to their Montgomery, Ala., office also was announced by National Potash. Boswell will work the states of Georgia and Mississippi under the supervision of Fred C. Broadway.

In the December FARM CHEMICALS, it was incorrectly stated that William B. Porterfield Jr. was named a sales representative for NP. Porterfield is vice president and sales manager of the firm.

Nitro-Form Agricultural Chemicals. Addition of Dr. Fred V. Grau, agronomist, to its staff is announced by the firm. Dr. Grau is credited with discovery of



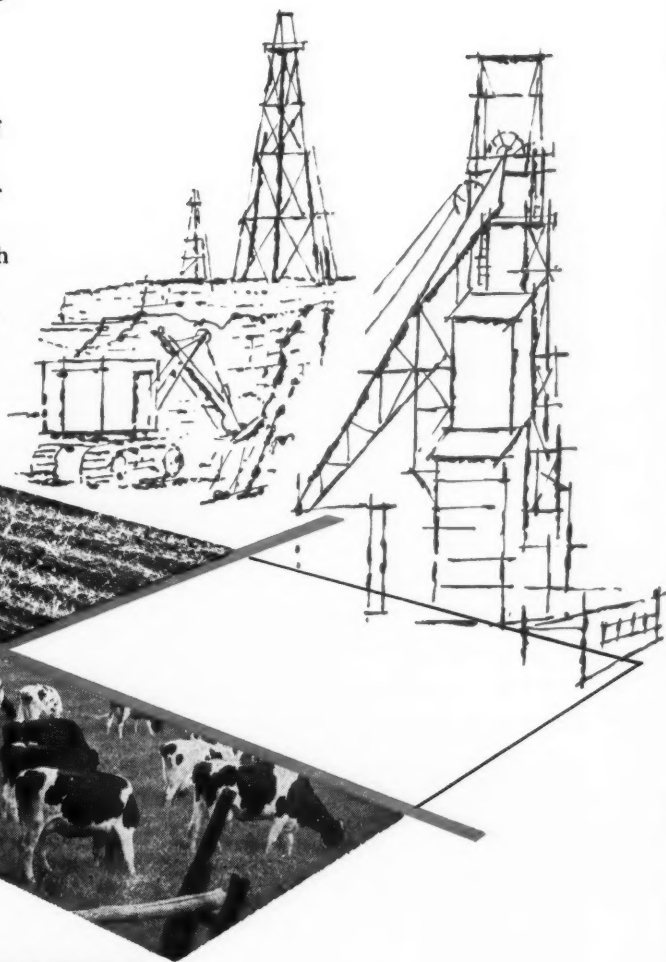
Grau



a joint venture in Potash

A new, substantial and dependable source of potash for fertilizer manufacturers is being developed by National Potash Company in New Mexico.

National Potash is a joint undertaking of Pittsburgh Consolidation Coal Company and Freeport Sulphur Company. The former is one of the nation's major coal firms, the latter a leading producer of sulphur with additional interests in oil and other minerals. The skills which they bring to the mining, refining and marketing of potash assure top quality, uniformity and service.



**NATIONAL
POTASH COMPANY**

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... People

Crown Vetch, development of Merion Kentucky bluegrass, Meyer zoysia and U-3 bermuda, reports Nitro-Form.

Olin Mathieson Chemical Corp., Plant Food Div.



Campbell

Olin Mathieson in 1953.

appointed agronomist for the north central district is Dr. Joseph D. Campbell. His headquarters will be in Omaha, Nebr. Dr. Campbell joined Olin

Potash Co. of America.

Harry Carroll is named sales



Carroll

PCA's Midwestern territory.

A graduate of the University of Georgia in 1950, Carroll went to PCA immediately after service in the Navy.

Smith-Douglass Co. W. B. Copeland, executive vice president since 1954, has resigned, company officials recently announced.

Southern Nitrogen Co., Inc.



Wofford

east. Wofford studied Business

In his new position as director of agronomy, Dr. Irvin M. Wofford will work closely with agricultural research and extension leaders of the South-

Administration at Oglethorpe Univ. and Piedmont College, graduated from the Univ. of Ga. School of Agriculture in Agronomy, received his Master's Degree in Agronomy from the Univ. of Florida and Doctor of Philosophy Degree from Michigan State. He served with the research staff of the Dept. of Agronomy, Fla. Agr. Exp. Sta., where he conducted research on the management and production of field crops.

Southern States Phosphate & Fertilizer Co.

Jack Dana Lee has been promoted to vice president in charge of manufacturing, and Charles B. Compton to vice president in charge of sales. Lee has been with Southern States for six years, serving as superintendent for the past 18 months. Compton has been with the firm for four years and held the position of sales manager at the time of his recent election.

Spencer Chemical Co.

Employment of Dr. Joseph B. Skaptason as manager, agricultural product development, is announced. In this capacity he will manage the field development activities of new farm



Skaptason

chemicals resulting from Spencer's research program and assist in development of the firm's long range plans in agricultural chemicals. He formerly was director of new product development in Pittsburgh Coke & Chemical Co.'s Agricultural Div.

Stauffer Chemical Co. has named Wyman L. Taylor administrative assistant to the vice president, Pacific Coast. A graduate of the Univ. of Calif. in Chemical Engineering, he joined Stauffer in 1946 and had been No. Calif. sales manager, Industrial

Chemicals, prior to his promotion. He is succeeded at that post by William H. Oliver.

U. S. Industrial Chemicals Co.

Lawrence C. Byck, Jr. is new manager of heavy chemical sales, with responsibility for sales of nitrogen products, phosphoric acid and sulfuric acid.



Byck

Byck, a graduate of Yale Univ., has been assistant to the manager of chemical sales during the past four years and has been with the USI organization since 1945 in research and technical liaison positions as well.

New Consulting Firm is Formed

Formation of a new firm of industrial consultants, known as Calkin & Bayley, Inc. is announced by John B. Calkin and George T. Bayley, president and vice president, respectively.

The new organization, located at 50 East 41st St., New York City, will specialize in marketing and economic research, product and market development, process development and design, business and plant surveys, analysis and testing.



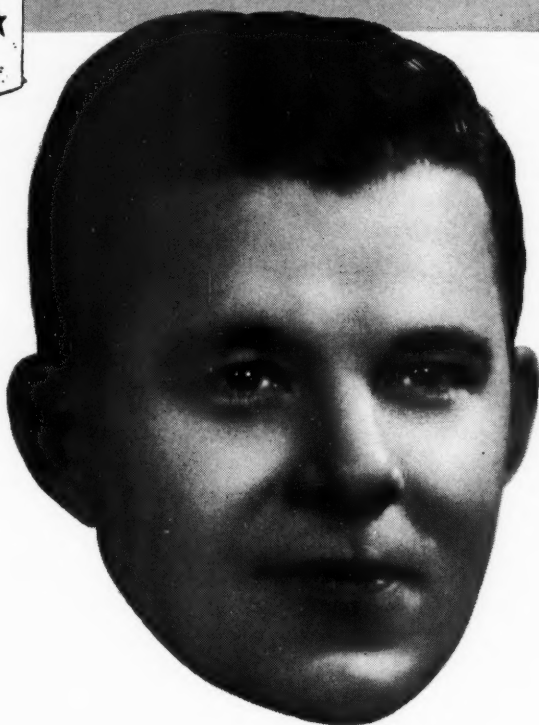
Calkin

Calkin, who has had a consulting office in New York City, was also formerly associated with Foster D. Snell, Inc.

Bayley was with the chemical advertising department of the JOURNAL OF COMMERCE for the past five years.

Vice president in charge of marketing and economic research for the firm is Robert Frank, and John L. Parsons is vice president in charge of pulp and paper.

THE MAN WITH THE MULTIWALL PLAN



**UNION
PACKAGING ENGINEER
ROBERT BOLLING**

**cuts
60 sizes
from
inventory of
20-million-
Multiwall
user**

**Impressive savings in
cost, space, handling
and inventory control**

A leading manufacturer of plant food has simplified his Multiwall inventory problem, reduced his packaging costs, released valuable storage space, and saved an impressive number of man hours by revising the Specifications Manual which guided his company's purchase of 20 million bags a year.

The opportunities for more efficient control were first pointed out by Packaging Specialist Robert Bolling of Union. With the consent of the manu-

facturer, Bolling then surveyed the company's complete bagging operation. The new Specifications Manual was one of the results. Savings are expected to run well over \$100,000.

Union Multiwall Specialists have helped many companies effect substantial economies and gains in Multiwall performance.

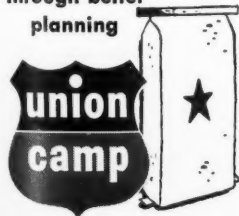
Ask about Union's 5-Point Packaging Efficiency Plan, and how you can take advantage of it without either cost or obligation.

**Union Multiwall Recommendations
are based on this 5-point
Packaging Efficiency Plan**



- DESIGN
- EQUIPMENT
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**Better Multiwall performance
through better
planning**



UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

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Associations & Meetings

NAC to Convene In San Francisco

The need for more technically trained men and women to speed progress in agriculture will be highlighted at the spring meeting of the National Agricultural Chemicals Association in The Fairmont Hotel, San Francisco, Calif., March 6-8, 1957.

Specific topics on the March 6 program include the NAC President's address on the outlook for the agricultural chemicals industry, Fred W. Hatch, manager, Agricultural Chemical Div., Shell Chemical Corp.; "Men for Agricultural Progress," Dr. S. B. Freeborn, provost, Univ. of California; "Money for Agricultural Progress," Earl Coke, vice president, Bank of America; and "Credit for Agricultural Progress," J. A. Walker, general credit manager, Standard Oil Co. of Calif.

Association committee meet-

ings and conferences will be held on March 7, and the following day's program includes a talk by Fred Shanaman, president of Pennsylvania Salt Mfg. Co. of Washington on the outlook for return on investment in the industry; discussion by representatives of government agencies on where growers and industry stand today under the Miller amendment; a report on the latest developments in forest pest control and a graphic presentation of the current work of NAC.

CFA Workshops For Fert. Salesmen

A series of workshops for fertilizer salesmen and dealers are being sponsored by the California Fertilizer Association's Soil Improvement Committee at Riverside, Fresno, Salinas and Sacramento. Basis for all discussion is the WESTERN FERTILIZER HANDBOOK.

NPFI Cooperates In Soil Testing

Utah State Agricultural College, the Utah Bankers Association and the National Plant Food Institute, jointly are sponsoring a program to promote increased use of soil tests by Utah farmers as a "tool" for increasing efficiency in agriculture.

NPFI is bearing part of the cost of the soil testing program, which

includes supplying two soil sampling tubes, free, to any interested bankers in Utah. Bankers, in turn, lend the tubes to their farmer-borrowers.

Another phase of the joint program includes the distribution of instructional leaflets and soil cartons by the college to the banks, free of charge.

RIGHT: Coe Larkin, a Smithfield, Utah, farmer, receives soil sampling materials from Asst. Cashier Fred Thompson, Cache Valley Bank. **LEFT:** Ext. Soil Scientist Paul Christensen places soil in sample bag held by Larkin, as James Thorne completes description. Thompson looks on.



22

The first Riverside program was held at Mission Inn on Jan. 9 and another will be presented Feb. 21 at 10 a.m. Each of the remaining workshop programs will be on Feb. 8 and Feb. 21, all at 10 a.m. They will be held at the following locations: Fresno, The Fresno Hacienda, both programs; Salinas, Berdell's Cafe, both programs; and in Sacramento, both workshops will be held in Committee Room 5, Civic Memorial Auditorium, 15th and Jay Streets.

Okla. Fert. Group Elects Meggs Pres.

Newly elected president of the Oklahoma Plant Food Educational Society is James E. Meggs, sales manager for Nichols Fertilizer & Chemical Co. Meggs last year served as vice president of the group. The



Meggs

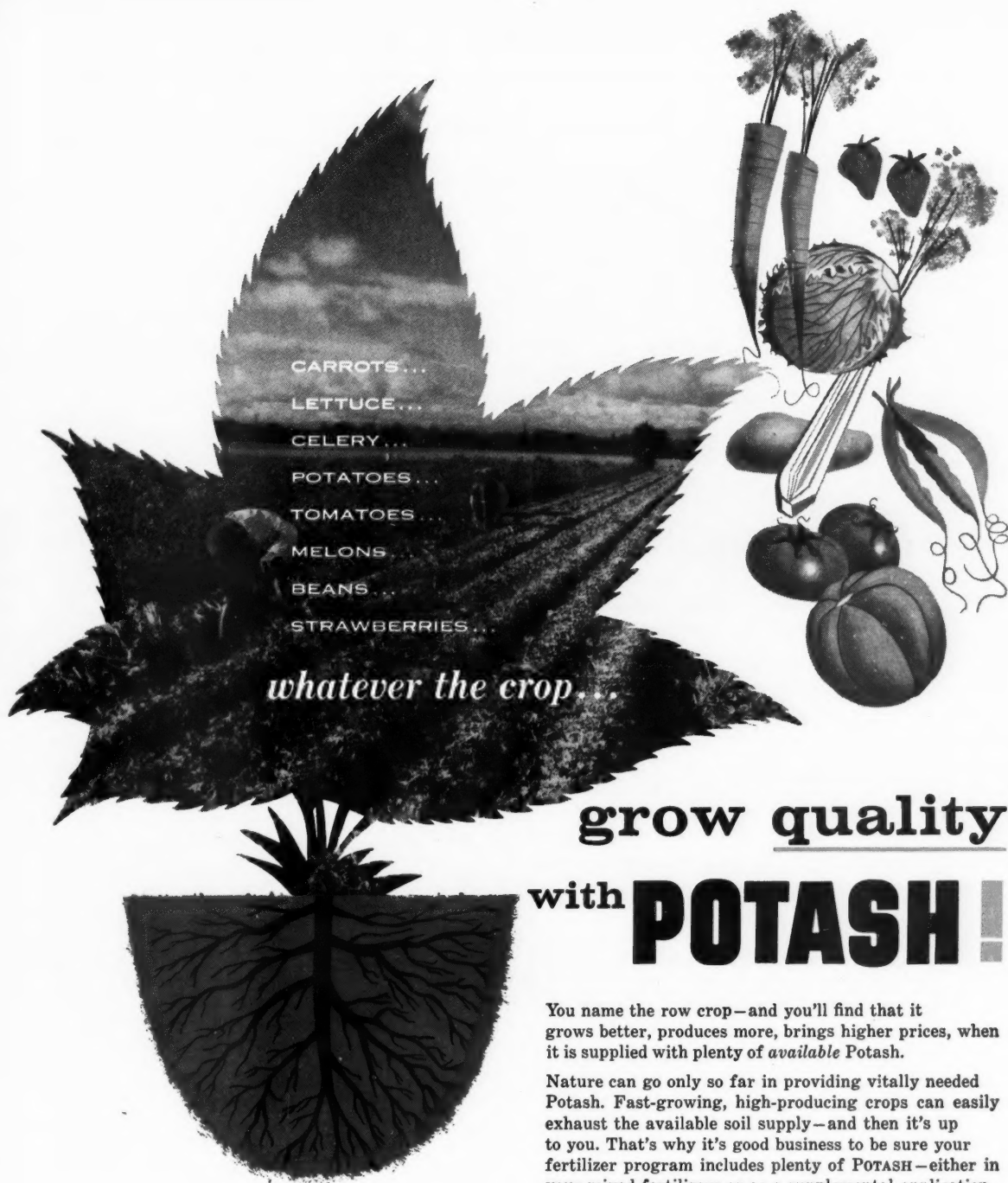
society is composed of representatives of Oklahoma A&M, fertilizer industry, fertilizer dealers, bankers, farmers and other individuals interested in increased soil fertility.

Conf. on Materials Handling Scheduled

Thirty-two speakers from all types of industries will lead discussions at the 7th National Materials Handling Conference according to an announcement by the American Material Handling Society, sponsor of the meeting. The conference will be held in conjunction with the National Materials Handling Exposition at Convention Hall, Philadelphia, April 29-May 3. Both will have as their theme, "Materials Handling, Key to Automation."

About 250 companies are expected to exhibit more than 100 types of materials handling equipment under simulated plant conditions.

FARM CHEMICALS



CARROTS...
 LETTUCE...
 CELERY...
 POTATOES...
 TOMATOES...
 MELONS...
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whatever the crop...

grow quality with **POTASH!**

You name the row crop—and you'll find that it grows better, produces more, brings higher prices, when it is supplied with plenty of *available* Potash.

Nature can go only so far in providing vitally needed Potash. Fast-growing, high-producing crops can easily exhaust the available soil supply—and then it's up to you. That's why it's good business to be sure your fertilizer program includes plenty of **POTASH**—either in your mixed fertilizers or as a supplemental application.

American Potash & Chemical Corporation is a basic supplier of Potash. Consult your fertilizer dealer today and be sure to specify plenty of TRONA® POTASH, the vitally needed plant food.

American Potash & Chemical Corporation



*Producers of: BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM
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 214 WALTON BUILDING, ATLANTA 3, GEORGIA

... Associations & Meetings

NPFI Display at Bankers Meeting



Ben Glassen, W. R. Alstetter, Robert E. Lee Hill

Two officials of the Missouri Bankers Association flank W. R. Alstetter (center), National Plant Food Institute vice president, in front of the Institute exhibit at the Fifth National Agricultural Credit Conference, American Bankers Association, held recently in St. Louis, Mo.

Robert E. Lee Hill (right), is executive manager of the Mis-

souri Bankers Assn. which was host group to the conference, and Ben Glassen (left) is vice president, Mechanics Bank and Trust Co., Moberly, Mo., and chairman of the MBA Agricultural Committee.

The group is discussing the new "Soil Treatments in Balanced Farming" booklet just published for MBA by NPFI.

Martin Named API Publicity Director

American Potash Institute has named Sanford Martin, Jr. as head of publications and director of publicity. He goes to the institute from North Carolina State College where he was publications editor for the development program of the college.

Doty to Head ACS Ag & Food Sect.

Dr. D. M. Doty, assistant director of research and education of the American Meat Institute Foundation, Chicago, has been elected chairman of the American Chemical Society's Div. of Agri-

cultural and Food Chemistry

Dr. H. L. Haller, assistant chief of the Bureau of Entomology and Plant Quarantine, USDA, was chosen as chairman-elect, and Prof. Frank M. Strong of the Univ. of Wisc. was renamed secretary-treasurer.

PNPFA Elects McCollum President

Largest attendance in its history, 191, was reported at the recent convention of the Pacific Northwest Plant Food Association.

Officers elected at the meeting included Ben McCollum, J. R. Simplot Co., president; Frank

Taylor, Ore.-Wash. Fert. Co., vice president; Henning Walters-dorph, Magnolia Fertilizer Co., treasurer, and Leon S. Jackson, Portland, Ore., secretary.

Northeastern Weed Control Conf. Held in New York

Attending the 11th annual meeting of the Northeastern Weed Control Conference, January 10-12, at the Sheraton-McAlpin Hotel, New York, were several hundred research workers and commercial people gathered to hear the latest information on weed control, and from all appearances it would seem that weed control problems are fast becoming solved through chemical application.

During the afternoon session on the first day of the meeting, W. C. Greene presented a subject regarding the highway program and the problem of highway rights-of-way. Entitled "The Role of Herbicides in the Expanded Highway Program," Mr. Greene, a landscape engineer for the Connecticut State Highway Commission, stated that the proper and judicious use of herbicides by trained personnel coupled with good conservation practices will make this vast acreage (approximately 1 million acres) more attractive and more interesting to the public.

Sectional meetings consisted of weed control in horticultural and agronomic crops, aquatic weed control, public health aspects and the industrial application of herbicides.

Officers of the conference acting in their various capacities were Dr. L. L. Danielson, president; C. L. Hovey, vice president; R. J. Aldrich, secretary; and D. A. Schallock, treasurer. R. A. Peters was program chairman.

Calendar

Feb. 4-6. Cotton States Branch, Ento. Society of America, Birmingham, Ala.

Feb. 14-15. Joint meeting, Midwestern agronomists & fert. industry. Sponsored by Middle West Soil Imp. Committee. Edgewater Beach hotel, Chicago.

Feb. 17-19. 16th Nat. Garden Supply Show, New York Coliseum, NYC.

Feb. 19-20. Ala. Pest Control conf. & meeting of Ala. Assn. for the Control of Economic Pests, Auburn.

March 5-6. Western Cotton Prod. Conf., Westward Ho Hotel, Phoenix, Ariz.

March 6-8. NAC Assn. Spring Meeting, Fairmont Hotel, San Francisco.

March 11-12. S. W. Branch Entomological Society, Gunter Hotel, San Antonio, Tex.

March 12-13. Chemical Market Research Assn., Sheraton Hotel, Philadelphia.

March 26-28. Council for Agri. and Chemurgic Research, Congress Hotel Chicago, Illinois.

March 27-29. North Central Branch, Ent. Society of America annual meeting, Des Moines, Iowa.

April 2. Western Agri. Chem. Assn., Hotel Biltmore, Los Angeles, Calif.

May 20-22. Chemical Specialties Manufacturers Association, Mid-Year Meet. Drake Hotel, Chicago.

June 9-12. National Plant Food Food Institute, annual meet. Greenbrier Hotel, White Sulphur Springs, W. Va.

June 17-19. 15th Convention Assn. of Southern Feed and Fert. Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala.

June 26-28. Eighth Annual Fert. Conf. of Pacific N. W., Benson Hotel, Portland, Ore.



MURIATE OF POTASH for the PLANT FOOD INDUSTRY

THIS symbol stands for high-grade coarse and uniform Muriate of Potash (60% K_2O minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K* Muriate for the plant food industry.

*Trade Mark

Southwest Potash Corporation

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GOVERNMENT

CCC Reports 60% Dollar Sales

Dollar sales accounted for more than 60 per cent of the Commodity Credit Corp. inventory stocks which have been moved into consumption since 1953, USDA reported in a year-end review of its surplus disposal operations.

Largely through cash sales, CCC inventories of several commodities have been drastically reduced or completely depleted. For example, CCC has hung the "sold out" sign on butter, cottonseed oil, linseed oil, seeds and dry edible beans. Rice inventories are all committed for sale. Wool and cotton are being sold into market channels in steady volume.

Plant Quarantine Inspection Summary

Plant quarantine inspectors at the Nation's ports of entry and border stations during 1956 intercepted some 17,500 shipments containing plant pests and 244,000 lots of contraband plant materials, USDA reports. They inspected more than 97,000 airplanes and 46,000 ocean vessels, in addition to more than 100,000 freight cars and 17 million vehicles crossing U. S. borders.

Two Million Acres of Forest Sprayed

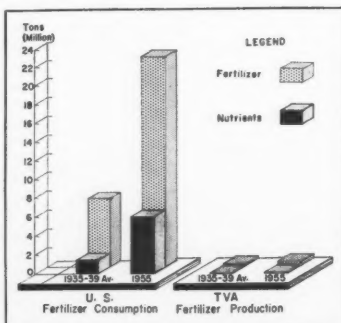
The Forest Service spearheaded a fight against insects and tree diseases on more than 2 million acres of forest land in 1956, announced USDA recently.

Working with the Forest Service on these jobs were the Dept. of the Interior, state forestry agencies and private landowners. Together, they treated 692,798 acres against blister rust which attacks white pine, hand sprayed

304,792 trees against bark beetles and used planes to spray 1,366,900 acres of timbered land infested with budworm.

TVA Produces 1.6% of Total U.S. Ferts.

In fiscal 1956, TVA plants produced 257,700 tons of concentrated phosphate and nitrogen fertilizers for distribution in about 35 states, according to the Authority's annual report. This amounted to only 1.6 per cent of the total fertilizer used in the Nation in 1955.



TVA issued 25 nonexclusive royalty-free licenses to fertilizer, chemical and equipment manufacturing companies for use of TVA patented processes. The report continued, "it was estimated that of 2 million tons of granular fertilizers made in the United States during the year, two-thirds was made by TVA-developed methods."

Two More Fla. Cos. Out of Quarantine

Restrictions affecting interstate movement of fruits, vegetables and other articles regulated under the Mediterranean fruit fly quarantine were to be revoked in Collier and Hendry counties, Florida, on Jan. 9, according to USDA.

Palm Beach county, Fla., was similarly removed from the reg-

ulated area on Dec. 12. Still remaining under regulation are the Florida counties of Broward, Dade, Lee and Pinellas.

USDA Research Developments in '56

USDA's Agricultural Research Service reported numerous advances in farm science during the past year. Cooperating in many of these achievements were state agricultural experiment stations in all parts of the country and research workers in a number of industrial and other private concerns. Here are a few of the highlights reported in insect control:

Radioactive tracers revealed how some insects develop resistance to insecticides. Scientists also learned how to trace with Geiger counters the paths of "tagged" insects—even those beneath the soil or bark of trees.

An outstanding insect repellent, N,N-diethyl-m-toluamide, was found highly effective against mosquitoes, stable flies, fleas, ticks and chiggers.

A virus-disease spray to control the Virginia pine sawfly proved successful in localized tests. Virus from naturally infected sawfly larvae was used.

A new systemic insecticide, Dow ET-57, given by mouth to cattle, showed promise for cattle-grub control.

When freed of crop-destroying nematodes by new fumigants, soils produced crops valued 4 to 10 times the cost of fumigation. One friendly nematode was found that transmits a bacterial disease highly destructive to several injurious insects.

ICA Authorizations

Republic of Korea. \$6,000,000—fertilizers* (PA No. 89,230-99-H9-7003). Includes nitrogenous fertilizers, \$4,500,000; potash fertilizers, \$150,000; phosphates and other fertilizer materials, including mixed fertilizers, \$1,350,000. Contract period: Jan.

21 to May 30, 1957. Source: World wide. Terminal delivery date: July 31, 1957.

\$18,500,000—fertilizers* (PA No. 89-230-99-H9-7004). Includes nitrogenous, \$17,707,500; potash, \$453,250; phosphate and other materials including mixed fertilizers, \$3,339,250. Contract period: Jan. 21 to March 31. Source: World wide. Terminal delivery date: June 30.

\$10,000,000—fertilizers* (PA No. 89-230-99-H9-7006). Includes nitrogenous, \$7,000,000; potash, \$280,000; phosphate and other fertilizer materials including mixed fertilizers, \$2,720,000. Contract period: Jan. 21 to April 30. Source: World wide. Terminal delivery date: Aug. 31.

\$150,000—phosphate rock fertilizer* (PA No. 89-235-99-H9-7008. Contract period: Jan. 21 to May 31, 1957. Source: World wide. Terminal delivery date: June 30.

Pakistan. \$200,000—construction of fertilizer factory. Includes

electrical apparatus, \$20,000; industrial machinery, \$160,000; misc. project items, \$20,000. Contract period: Jan. 10 to June 30. Source: World wide. Terminal delivery date: Dec. 31, 1957. Procurement through Pakistan Ind. Development Corp.

Vietnam. \$975,000—fertilizers* (PA No. 30-235-99-H9-7018). Includes potash fertilizers, \$100,000; phosphate and other fertilizer materials, including mixed fertilizers, \$875,000. Contract period: Jan. 21 to May 31. Source: World wide. Terminal delivery date: Oct. 31.

\$400,000—nitrogenous fertilizers* (PA No. 30-230-99-H9-7019). Contract period: Jan. 21 to May 31. Source: World wide. Terminal delivery date: Oct. 31.

\$100,000—agricultural pesticides (PA No. 30-236-99-H9-7020.) Contract period: Dec. 28, 1956 to June 30, 1957. Source: World wide. Terminal delivery date: Aug. 31.

*Barter provision: Any offer

to supply commodities hereunder, involving sale price of \$100,000 or more, made on a bid basis pursuant to an invitation for formal bids, and which expresses a willingness to accept surplus agricultural commodities from the Commodity Credit Corp. as full payment in lieu of dollars, shall have preference over any other bid/offer where price and other terms are equal.

Wheeler Named Special Assistant

Clyde A. Wheeler, Jr., of Oklahoma, has been named as a special assistant to the Secretary of Agriculture to maintain liaison between USDA and Congress.

Swanson Honored

Dr. C. L. W. Swanson has been elected a Fellow of the American Society of Agronomy for his contributions to research in soils. This is the highest honor bestowed on soil scientists by the society.

Escambia Chemical, a Bright, New Name in Nitrogen

"BAY-SOL" NITROGEN SOLUTIONS

ANHYDROUS AMMONIA

AMMO-NITE AMMONIUM NITRATE FERTILIZER — 33.5% NITROGEN



MORE IN SERVICE, MORE IN QUALITY

Technical service field representatives, to aid you with any problem, are as near as your telephone.

Modern, easily accessible manufacturing plant and continuing research.

Conveniently located service offices.

Strong supporting advertising in newspapers, farm magazines and other media.

Manufactured by

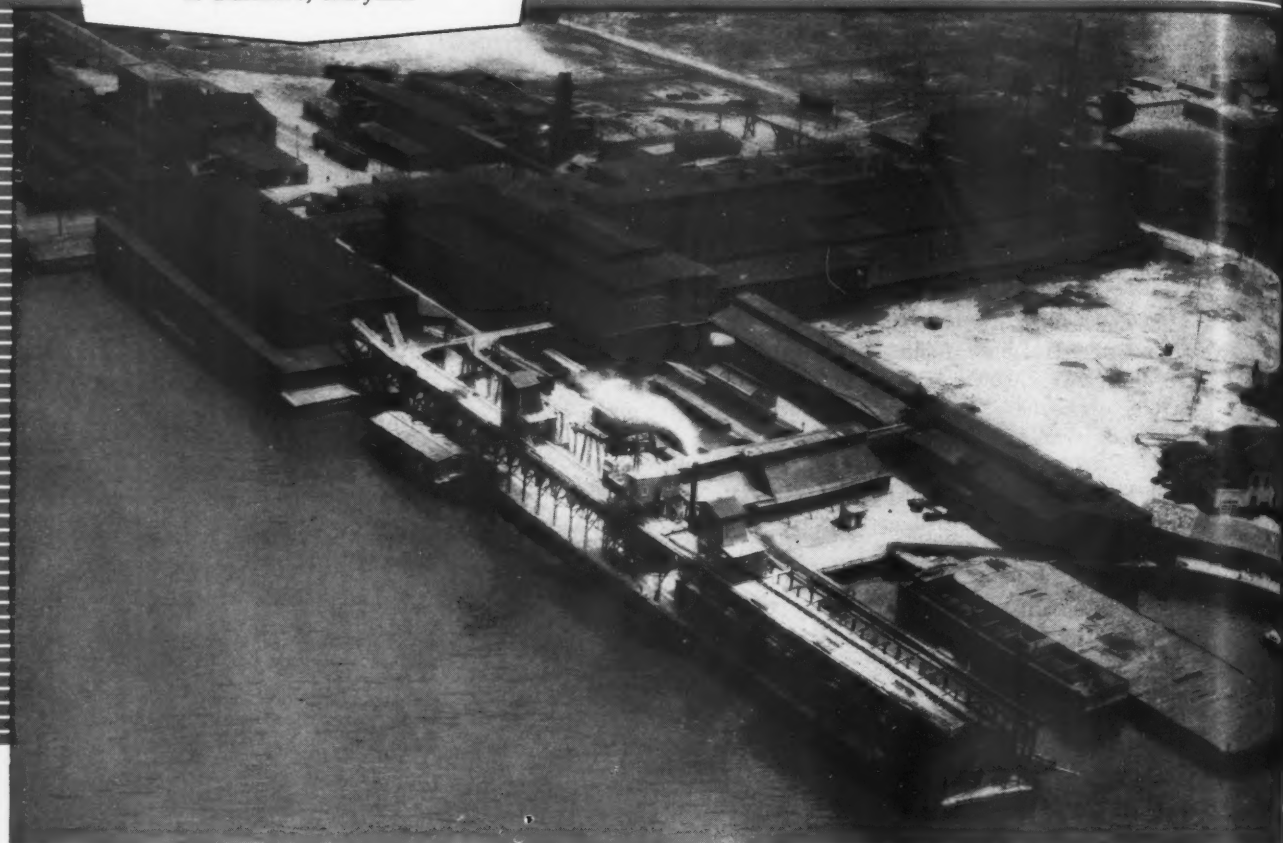
Escambia Chemical Corporation
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DISTRICT OFFICES: Norfolk, Va., Charleston, S.C., Tampa, Fla., Jackson, Miss., Montgomery, Ala., Columbus, Ohio, Des Moines, Iowa.

*Baltimore A.A.C. Co. Plant
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Another source of AA quality products

To meet your "quick" or "long term" requirements for a variety of chemicals, depend on the A.A.C. Co. You can count on uniform quality and guaranteed purity through rigid laboratory control. You'll get expert assistance from skilled research people in developing "specials" for unusual projects. And you can count on prompt service.

CHOOSE FROM THESE AA QUALITY PRODUCTS[®] FOR FARM AND INDUSTRY

Florida Phosphate Rock • Superphosphate • AA QUALITY Ground Phosphate Rock
All grades of Complete Fertilizers • Gelatin
Bone Products • Fluosilicates • Ammonium Carbonate • Sulphuric Acid
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GENERAL OFFICES: 50 CHURCH STREET, NEW YORK 7, N. Y.

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Port Hope, Ontario



VIEWING WASHINGTON

with Farm Chemicals
Washington Bureau

on agriculture

The big issue in Congress this year now definitely is the Soil Bank—on the farm front. Chances are that basic changes in the program, such as putting greater emphasis on conservation, will not be made this year.

Of interest to the chemical industry, however, is the campaign to increase the payment rates for crops put into the acreage reserve—which pays farmers for underplanting major crops.

Southern congressmen, in particular, want rates increased. They are bitter over what they consider preferential treatment given corn in the 1956 program.

They want rates increased for tobacco, rice and cotton to permit southern growers to share in the billion-dollar Soil Bank kitty. They point out that corn growers received about 70 per cent of the 1956 acreage reserve funds, compared with less than 14 per cent combined for the southern crops. While rates may be increased, the chances are not good.

Farmers will put more fertilizer on the cropland in use to make up for land put into the Soil Bank. That's the considered opinion of experts testifying before the House Agriculture Committee. They point out that the relatively small trend last year will in all probability speed up greatly this year—as farmers become more “educated” to the possibilities under the Soil Bank.

Grange Master Newsom, for one, predicts that this reaction to the Soil Bank will result in greater farm production, greater surpluses, than otherwise. The Soil Bank's chief aim is to reduce production of surplus crops.

A new corn program is likely to be put on the books by Congress this year—and it probably will be very much the same as the one proposed by President Eisenhower in his budget message. But there'll be lots of talk and log-rolling before the deed is finally accomplished.

The need for a new program is spotlighted by the fact that the present acre allotment program provides such small acre allotments that few farmers can afford to cut back.

Means most farmers won't get price support this year—unless a change is made.

The Administration proposal generally is to revive the Soil Bank base acreage program—voted down by farmers in a December referendum. Under this, farmers would get larger permissible acre shares and would be eligible for support at a lower level if they complied.

The Agriculture Department budget for the fiscal year beginning July 1 is roughly 20 per cent greater than the budget submitted by Secretary Benson when he first took office four years ago.

His detractors are making a big thing of this in Congress. They point out that one of the first things the Secretary did after he assumed USDA leadership was put out an official release pledging to bring “economy” to the USDA, which he labeled a “big sprawling beaurocracy.” Increases in budget are sought primarily for research and conservation.

VIEWING WASHINGTON

on business

Congressional activity of importance to the industry is off to a fast start.

Here are highlights of developments early in the new session:

No tax relief for industry or individuals is likely this year. The Administration is following through on this policy of the Treasury Department.

The President says flatly he wants the 52 per cent corporate income tax to continue for at least another year beyond the present expiration date, April 1. This tax was boosted 5 percentage points, from 47 per cent to 52 per cent, during the Korean war. The increase yields the government about \$2 billion a year. Present excise taxes also are likely to be continued—yielding the government \$1 billion yearly.

Tighter industrial safety laws are likely to result from the Administration's new legislative program. The proposed program would involve a grant-in-aid fund of \$10 million a year to help states establish better safety codes and enforcement procedures.

Chances for approval by Congress this year are rated good. The problem is highlighted by the figures: about 2 million workers injured each year and about 15,000 killed on the job.

A flood of antitrust bills descended on Congress. Influential Rep. Celler (D., N. Y.) proposes a cut from 90 to 60 days of the advance notice merging corporations must give the Federal Trade Commission and Justice Department before consummating a merger deal. He also would provide the FTC with authority to seek injunctions against merger consummations.

Small business may get tax relief while big business misses this time. Majority party members of the House Small Business Committee are pushing this program: (1) a graduated corporation income tax, (2) more liberal provisions to allow unincorporated firms to elect to be taxed as corporations, (3) improved capital gains provisions, (4) an option for the taxpayer to pay estate taxes over a period of 10 years, and (5) repeal of World War II and Korean excises.

The phosphate mining bill, which passed the Senate but died in the House last year, looks like a good bet for passage this year. The bill would amend the 1920 Mineral Leasing Act by lifting the phosphate mining limitation in any particular state.

Under the present law, there's a limit of 10,240 acres on the phosphate leases nationally, with a ceiling of 5,120 acres in any one state. The bill would retain the 10,240-acre national limit, but erase the 5,120-acre state limit. Introduced by Sens. Murray, Mansfield and Scott in the Senate, and Rep. Baring of Nevada in the House.

Other early bills include:

HR 783, Metcalf, to direct studies in the Interior Department on the effect of pesticides on fish and wildlife. Bill was introduced last year, but died in Committee.

HR 83, Alger, to order a survey of the fertilizer production of the Tennessee Valley Authority.

HR 366, O'Hara, to require pretesting of new chemical additives to food products. Same as last year, with a better than 50-50 chance of getting through the House this year, and Senate in 1958. Hearings are expected to be held.

In full color . . . for counter, shelf, wall.



How Cyanamid helps sell your **MALATHION** formulations

And helps you sell them too! . . . The advertisement in this point of sale display will make over 135 million advertising impressions in 1957.

The display can focus all this advertising power on your product right where sales are made: on the counter, wall or shelf of dealers selling your malathion formulations to home gardeners. And it does more. It carries your malathion

package. Its full color illustrations diagnose bug problems by themselves. It hands out free consumer folders. Streamers, folders, envelope stuffers go with it, ALL FREE for the asking.

Heavy trade advertising has alerted your distributors and dealers, offered these *working* sales tools. So has direct mail. It's the biggest, most helpful insecticide advertising and merchandis-

ing campaign in garden trade history. Get details on how to put complete malathion sales kits (to sell your product) in the hands of your distributors. Write or call American Cyanamid Company, Nitrogen and Allied Products Division, Dept. AC, 30 Rockefeller Plaza, New York 20, N. Y.

CYANAMID

PRODUCERS OF: Aero® Cyanamid Fertilizers—Herbicides
Aero® Ammonium Sulphate Amanol® Nitrogen Solutions
Phosphates for Acidulation and Direct Application Thiophos® Parathion Technical
Cyanogas® Calcium Cyanide Fumigants Potassium Cyanate Weedkiller for Agriculture and Turf

Aeropills® Ammonium Nitrate Fertilizer
Anhydrous Ammonia HCN Fumigants
Malathion Technical *Trade-mark



"Best time-saver I know of

is the burlap bag," says A. R. Baggett, prosperous truck-farmer of Suffolk, Virginia. "There's no wasted, spilled fertilizer with strong-seamed burlap bags that stand up to rough handling. They stow better and take less men for loading and unloading. I've been a burlap man for 35 years—was, have been, and always will be."

Time-saver, money-saver—no wonder burlap is the farmer's favorite bag. Suppliers who are trying to serve the farmers' best interests pack fertilizer in burlap bags. Fertilizer keeps better in ventilated burlap bags and handles easier in the tough, heavy-duty burlap. You can save your own time and money by packing in the good old standby—burlap.

**Just ask your own customers —
they'll tell you that burlap**



Is strong — takes dragging, dropping, man-handling — any tough job on the farm.



Gives good ventilation — keeps farm supplies and products fresh.



Laughs at sudden showers — wetness or dampness can't weaken it.



Saves money — extra value from re-sale and re-use.



Saves storage space — stacks to any height without slipping.



Has 1000 uses — always in demand on the farm (popular with farm wives, too!)

THE BURLAP COUNCIL

of the Indian Jute Mills Association

155 East 44th Street, New York 17, N. Y.

Arcadian® News

Volume 2

For Manufacturers of Mixed Fertilizers

Number 2

GETTING MORE NITROGEN INTO SUPERPHOSPHATE

New Ammoniation Methods Increase Nitrogen Take-Up!

Ammoniating superphosphate is the low-cost way of getting nitrogen into mixed fertilizers. For a long time the rate was 3 pounds of ammonia per unit of P_2O_5 . However, through the use of modern methods and materials this rate has been greatly increased.

One unit of P_2O_5 in 20% superphosphate has been made to readily accommodate 5½ to 6½ pounds of free ammonia, without the aid of acid or the loss of nitrogen. Much good fertilizer is being made with ARCADIAN® Nitrogen Solutions supplying 1 unit of nitrogen for each 2 units of P_2O_5 .

A new method of excessive ammoniation has also been developed which has been called "calculated loss." By this method, 1 unit of P_2O_5 retains 8 pounds of nitrogen by the application of 9 pounds in ammoniation. This means that 1 pound is lost but the 8 pounds that are retained are still very low in cost. Through the use of acid, much higher rates are obtained. Some fertilizer manufacturers are getting all the nitrogen into 10-10-10 fertilizer by this method.

High take-up of free ammonia by superphosphate is usually desirable in the manufacture of any mixed fertilizers. It is particularly desirable in the production of granular fertilizers. A high rate of ammoniation not only adds large quantities of low-cost nitrogen, it also generates heat at an opportune time in granulation.



Efficient ammoniation involves proper technique, equipment and materials. There is a complete line of ARCADIAN Nitrogen Solutions from which selections can be made adapted to particular conditions. Nitrogen Division Technical

Men are experts in ammoniation. Their advice is free to customers.

Contact Nitrogen Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, New York.



Tonnage Opportunities

Fertilizer for Grasslands Big Opportunity for Sales

How much more fertilizer could your dealers sell if every farm customer used 500 pounds per acre on his pastures and hay fields? Even in the less concentrated livestock areas, the extra sales would mount into a tidy profit. And some farmers *do* use this much fertilizer on grazing land—despite the fact that pastures are probably the most neglected soils, fertilizer-wise, of all farmland.

Take the case of one dairy farmer who uses 500 pounds of fertilizer per acre on hay, pastures and silage crops. The high quality and high yield of his roughage saves him \$80 to \$100 per cow per year on feed. And he saves labor too, because the cows harvest the crop.

More Grass—More Protein

In Wisconsin, a series of tests with 500 pounds of 13-13-13 or 12-12-12 per acre of pasture produces \$45 to \$60 worth of extra feed per acre. Average dry weight yield of pasture with fertilizer was over 2 tons per acre (more than 13,300 pounds green weight). Without fertilizer, pasture dry weight yield was only 1,300 pounds (4,300 pounds green weight). Protein content of the fertilized pasture ran over

18%—the equivalent of a good dairy ration.

In Texas, total cost of fertilizer applications on a 6-acre pasture for 5 years was \$448. Compared to a 15-acre unfertilized pasture, this 6-acre plot with plant food produced 7% more milk, worth \$613. Extra hay was worth \$135. And the milk produced on the improved pasture tested 0.2% to 0.3% higher in butterfat. Over all, the \$448 for improving a 6-acre pasture returned \$1,044 above the income on the 15-acre unfertilized lot.

Benefits Native Grass

U.S.D.A. rangeland tests in Montana show similar improvement in range grazing. Range, fertilized with 90 pounds of nitrogen per acre, averaged 2,270 pounds of dry grass weight per acre each year, for six years. Without fertilizer, range produced only 748 pounds dry weight grass per acre. The percentage of protein in the grass also shot up, to provide extra feed benefits.

There is a big market for fertilizer right under the nose of the grazing cow. The more plant food we use on pastures, the better the livestock profits, and the better the fertilizer business.

Again we tell
3½
Million
Farmers
Fertilizer
Grows
Farm Profits

Farming today requires a bigger investment per worker than most major industries. It takes money to make money farming.

Fertilizer is one of the lowest cost items the farmer buys, closer to pre-war prices than anything else needed to grow crops. Fertilizer helps a farmer to get greater returns from his other investments in land, labor, machinery and other production costs.

The vital importance of fertilizer to the farmer is being brought to the attention of millions of readers of farm magazines in a powerful and continuing campaign conducted by Nitrogen Division, Allied Chemical & Dye Corporation.

Shown on the opposite page is one in a series of big, full-page advertisements appearing in farm magazines. Others have preceded it and more will follow. We trust that this campaign meets with your approval and we will greatly appreciate any comments or suggestions you may wish to send us.



Your fertilizer dealer wants to help you make more money...

The man helping the farmer test his soil in the photo above could be a County Agent or a Vo-Ag teacher. Actually he is a fertilizer dealer selling fertilizer with real service. He wants to supply his customer with the most profitable fertilizer for him to use—the fertilizer that will help every acre pay him more.

It's an important undertaking to provide you with the best value in fertilizers—the greatest crop-producing power for your money. That's why your dealer makes a careful study of crops and soils in your neighborhood. He knows the analyses and amounts of fertilizers used with success by other farmers. He studies Experiment Station results and Extension Service recommendations. He works with the County Agent and Vo-Ag teacher in crop and fertilizer demonstrations.

As costs mount for land, taxes, labor and machinery, your fertilizer dealer is eager to be of greater help to you. For fertilizer is more important to you now than ever before. It costs you less than anything else you have to buy to grow a crop. And average results show that it pays back several dollars for each one invested.

Talk it over with your fertilizer dealer. He wants to help you make more money this year. He wants your confidence and good will for many years to come.

The fertilizer industry serves the farmer. Nitrogen Division serves the fertilizer industry as America's leading supplier of nitrogen, the growth element in mixed fertilizers. Nitrogen Division, Allied Chemical & Dye Corporation, New York 6, N. Y.



This fertilizer dealer sees how well the plow-down fertilizer he recommended has rotted down crop residues to feed the new crop.

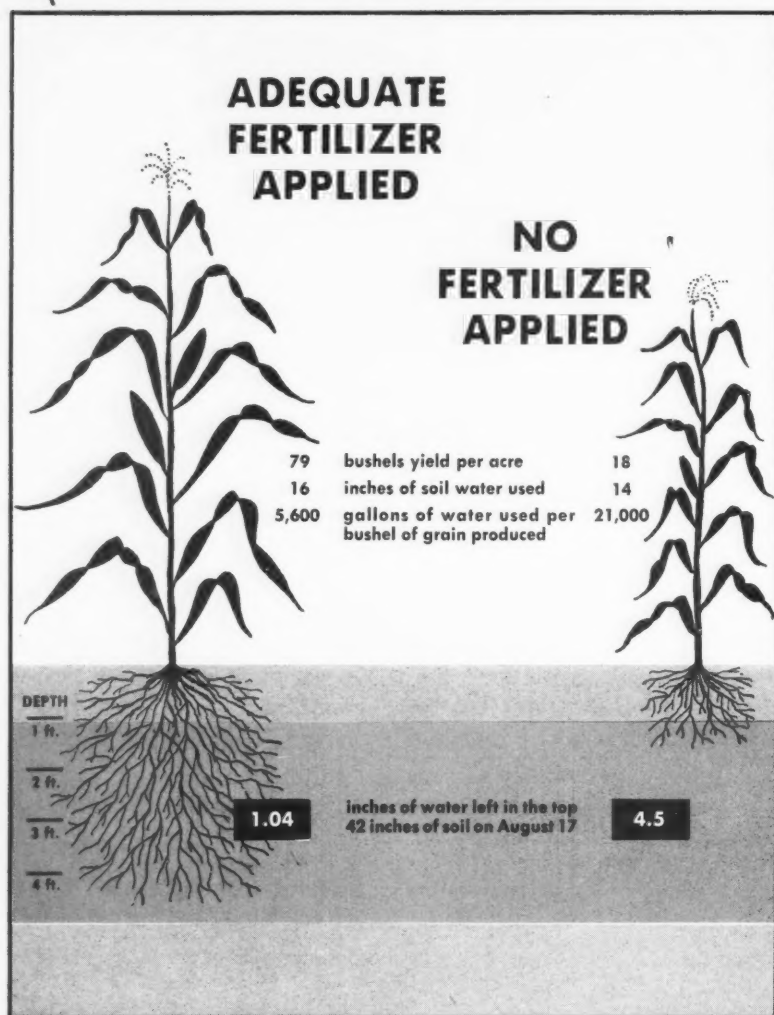


This fertilizer dealer helps a farm family estimate yield on a well-fertilized field. The smiles indicate a money-making crop.



This fertilizer fieldman checks grain plots to note good grain growth without lodging. His findings will benefit many farmers.

FERTILIZER GROWS FARM PROFITS



Less Water Is Required Per Bushel of Corn When Crop is Well-Fertilized

Farmers and fertilizer dealers alike are too often pessimistic about the use of fertilizer in a dry season, or following a dry season. Agronomists point out that when subsoil moisture is good, adequate fertilizer enables the crop to grow vigorously and send its roots deep for water. This is shown in the diagram above, based on Missouri tests in a year with only five inches of rain during the growing season. Unfertilized corn left much soil moisture unused.

When subsoil moisture is low, a thinner stand of corn with plenty of fertilizer will produce bigger ears and more bushels than either a thin, unfertilized stand or a thick stand that would run out of water before earing out.

Corn following a drouth year will get considerable benefit from the previous year's plant food. But at best it gets 40% to 60% of the fertilizer held over in the soil. Later crops will get the rest. A good crop still requires plant food applied in the season of growth.

In the dry summer of 1955, 48 Wisconsin farms with well-fertilized corn produced 85 bushels per acre. The state average yield was only 50 bushels per acre.

Wheat Yields Better

Other crops, too, yield better on a limited water supply when well fertilized. North Dakota tests showed fertilized wheat matured earlier and produced 5 bushels more per acre on the same amount of water as unfertilized wheat.

A COMPLETE LINE OF Nitrogen Products

Here is the most complete line of nitrogen products available to the fertilizer industry, made by America's leading producer of nitrogen and backed by many years of experience, dependable service and expert technical assistance:



NITROGEN SOLUTIONS:

URANA®
NITRANA®
U-A-S*
N-dure*

Other Nitrogen Products:

Anhydrous Ammonia
Urea Products
A-N-L®
Ammonium Nitrate
Sulphate of Ammonia
American Nitrate of Soda



NITROGEN DIVISION

Allied Chemical & Dye Corporation

40 Rector St., New York 6, N. Y.

Hopewell, Va.

Ironton, Ohio

Omaha 7, Neb.

Columbia, Mo.

Kalamazoo, Mich.

St. Paul 4, Minn.

Indianapolis 20, Ind.

Columbia 1, S. C.

Raleigh, N. C.

Atlanta 3, Ga.

Los Angeles 5, Cal.

San Francisco 4, Cal.

*Trade-mark

Chemicals

31—J-M Celite

Johns—Manville now has available a booklet on Celite and its various applications in formulations, as a diluent, and in fertilizers for the prevention of caking and assurance of flowability. For a free booklet on this versatile product.

CIRCLE 31 ON SERVICE CARD

32—Emulsifiers

Information is available on Toximuls H & L, twin emulsifiers, produced by Ninol Laboratories. When blended together in various proportions they impart spontaneity to emulsifiable formulations of chlordane, DDT, dieldrin, aldrin, endrin, etc. They also are capable of working with nonionics and sulfonates. More free information on these outstanding emulsifiers is available by circling below.

CIRCLE 32 ON SERVICE CARD

33—Soil Sterilant

Crag Mylone 85W is a temporary soil sterilant which controls annual and perennial weeds, nematodes and soil fungi and is produced by Carbide and Carbon Chemicals Co. Complete information is available on this product. Almost any crop can be planted in Mylone treated soil, provided a period of three weeks elapses between application and planting. For more information just

CIRCLE 33 ON SERVICE CARD

34—Pyrethrum Facts

Full and complete facts regarding pyrethrum and its application in insecticide formulations is presented in a booklet recently made available by African Pyrethrum Development, Inc. Coverage is given to the various uses of the material and statistical information regarding its consumption position in world sales. Additional quantities of this informative booklet are available for the asking. To obtain your free copy

CIRCLE 34 ON SERVICE CARD

35—Fritted Trace Elements

Case histories are presented in a NEWS NOTES bulletin recently made available by the Ferro Corp. Tests conducted were reported where trace elements were added to the soil in the form of fritted glass. Crops such as potatoes in New Jersey and corn in Illinois were treated. If you desire further details and more information on the results of additional tests the Ferro Corp. will make available, free of charge, performance data on these tests. For your copy of these reports, and the NEWS NOTES,

CIRCLE 35 ON SERVICE CARD

36—Hexachlorobenzene

Dow Chemical suggests application of hexachlorobenzene for the control of stinking smut and dwarf bunt. The material is completely soluble in methanol and ether and reacts readily with nucleophilic compounds. Information is available from Dow Chemical on this product. Just fill in the service card for your copy.

CIRCLE 36 ON SERVICE CARD

37—Nitrogen Solutions

Nitrogen Div., Allied Chemical and Dye,

now has new a bulletin on manufacturing nitrogen fertilizers. Subjects covered include formulations of nitrogen solutions, cooling ammoniated mixtures and handling nitrogen solutions, plus first aid hints. Conversion tables and acid equivalent charts are all handy for ready reference. Allowance has been made for future additions or changes by binding it with a removable slider. For more information and assistance in the formulation of liquid fertilizers.

CIRCLE 37 ON SERVICE CARD

How to use the READER SERVICE CARD

- Circle number of literature you want.
- Print or type your name, position, company and address.
- Clip and mail the Service Card.

38—Vapam

Stauffer Chemical Co., has available a brochure describing how soil fumigation increases yields of many crops. It outlines methods of fumigating soil by applying temporary soil sterilant, Vapam. Send today for a free informative eight page brochure giving complete details on the chemical.

CIRCLE 38 ON SERVICE CARD

Process Equipmt.

39—Thermo-Panel Coils

Dean Products Co., manufacturers of heating and cooling equipment, now have available a thermo-panel coil which can be bent to shape and size required. The result of the operation is that no jacketing is needed or piping and tubes. The coil is ideal for conveyors, mixers or kneaders

FREE INFORMATION to help you
solve fertilizer, pesticide problems

Reader Service

because of the elimination of pipe and tubes. For additional information just

CIRCLE 39 ON SERVICE CARD

40—Pulverizer Units

Sturtevant Mill Co., has available literature on the complete line of products which it manufactures, including information on granulators, mixing, feeding and screening machinery. Data is also presented on the rotary pulverizer which the firm produces. Capable of operating without stopping due to clogging and overloading, the Sturtevant pulverizer will keep your plant on a full capacity schedule this spring. Your free information on the company's line is available.

CIRCLE 40 ON SERVICE CARD

41—Bucket Elevator

Link-Belt Co. will recommend the right bucket elevator to meet your requirements. Because of Link-Belt's broad line of elevators, the correct one can be chosen to do the job properly and economically. Included in the considerations are such factors as correct buckets, chains and take-ups, plus the proper hood to prevent backlegging. In addition you get design advancements that minimize installation, operating and maintenance costs. For more information and suggestions on your plant problems just

CIRCLE 41 ON SERVICE CARD

42—Granulating Equipment

Blue Valley Equipment Co. can give you complete details regarding granulating equipment. The firm's engineers will be able to provide the proper know-how for installing the equipment which you require to change over to a granulating plant. Based on controlled liquid phase granulation, the operation will mean higher quality fertilizer and lower operating costs for you. Send today for free information on the services Blue Valley can provide you this coming year.

CIRCLE 42 ON SERVICE CARD

43—Grinding Equipment

Bradley Pulverizer Co. has available catalogs giving complete information on its grinding mill. Capable of producing a uniform grind of 20 to 325 mesh with limestone or phosphate rock, the mill provides low cost installation and maintenance. It is durable and non-clogging even on material with some amount of moisture,

and is available in various sizes to handle any requirements. Send today for your free booklet on the specifications of each machine.

CIRCLE 43 ON SERVICE CARD

Materials Handling

44—Bulk Carriers

Baughman Mfg. Co. has available information on its new bulk carriers capable of carrying free flowing materials. These units will be ideal for the hauling of non abrasive material which can be unloaded by means of an Auger Unloader. The unloader is available in body lengths up to 34 feet. The capacity for a 32-foot body, for example, is approximately 1150 cu. ft. A divided auger in the unit bottom carries the material to the center of body vertical discharge auger. A discharge is possible up to 19 feet above ground, with higher discharges available on special order. For more detailed information on this new Baughman Unloader

CIRCLE 44 ON SERVICE CARD

45—Tractor Shovel

Frank G. Hough Co. has available a product description bulletin on its Model HFC Payloader. Full details are given on this model, which has a torque converter drive allowing for faster operation, lower maintenance and infinite operating speeds. Many attachments are available: Fork lift, crane hooks, backfill blades and blade plows. With the Hough heavy duty transmission and heavy duty engines, this payloader will offer many years of low maintenance service. More free information is available if you

CIRCLE 45 ON SERVICE CARD

46—Liquid Fert. Hose

A hose designed for the dispensing of liquid fertilizers has been developed by Hewitt-Robbins, Inc. It is reinforced with a heavy braid of cotton yarn and lined with synthetic rubber resistant to ammonium nitrate solutions. The outer cover is green to conform with the Anhydrous Ammonia Institute color coding system. Additional information is available by indicating on the Service Card.

CIRCLE 46 ON SERVICE CARD

47—Idlers

Stephens-Adamson Mfg. Co., makers of

S-A Idlers, has available a bulletin providing information on conveyor idlers. Precision ball bearings are protected by a die-cast double labyrinth seal which will not corrode or wear, insuring lasting protection of bearings from dirt and moisture. Sufficient grease to last the normal life of each idler is sealed into each roller at the factory. Alemite fittings are also provided for easy relubrication if necessary.

CIRCLE 47 ON SERVICE CARD

How to use the READER SERVICE CARD

- Circle number of literature you want
- Print or type your name, position, company and address,
- Clip and mail the Service Card.

Packaging

48—Bag Flattener

A new vibrating bag flattener has been put on the market by Carrier Conveyor Corp. A simple, inexpensive machine, it is designed to flatten bottom-heavy bags of loose, bulk materials and is available in standard models, either fixed or portable. They all work on the Natural-Frequency principle, gently tossing the bags upward and forward with each movement of the trough. Flattening is achieved almost immediately because the material inside the bag conveys more quickly than the bag itself. Free information is available.

CIRCLE 48 ON SERVICE CARD

49—Bag Conveyor

A new adjustable-length flat belt bag conveyor designed for package conveying, particularly in line with filling and sewing operations, is described and illustrated in a new four page, two color bulletin, now offered by Richardson Scale Co. The new bulletin describes installation operation of the conveyor which coordinates bag packing and sewing into a single one-man operation. A key feature is the conveyor's

"telescope" design, which gives the user a choice of conveying lengths from 7' to 12'. For further information on this piece of equipment

CIRCLE 49 ON SERVICE CARD

Miscellaneous

50—Jacketing Materials

Kaiser Aluminum and Chemical Sales Co., recently released an illustrated book on jacketing materials and outside applications of aluminum for protection purposes. Included in the information are aids in selecting the proper jacketing and insulation materials. The information provided should help all those with plant problems on outside corrosion and insulation of heating or storage tanks, piping and vessels. Send for your informative book today. . . it's free.

CIRCLE 50 ON SERVICE CARD

51—Film Listings

United States Steel Company has available a catalog providing complete listings on the films the company has for public use. One film giving complete background as to how the steel industry contributes to the fertilizer industry should make interesting viewing. For your free listing of films from United States Steel just indicate on the service card.

CIRCLE 51 ON SERVICE CARD

52—Story of Farm Chemicals

A 32-page booklet on farm chemicals and the growth of the industry has been made available by E. I. duPont de Nemours & Co. Illustrated throughout, it covers the struggle of farmers to provide sufficient food for ever increasing populations. Also included is a presentation on how populations are increasing at a greater rate than our ability to produce food supplies, with current acreage, and the effect farm chemicals have on increasing our agricultural production. For your copy

CIRCLE 52 ON SERVICE CARD

53—Marking Tape

Plastic, extruded thermoplastic is a reflective pavement marker with many industrial applications. The catalog from the Prismo Safety Corp. has photos, diagrams, charts and detailed descriptions of various markers and where and how to use them. Send today for your free 12 page catalog giving full and complete particulars.

CIRCLE 53 ON SERVICE CARD

54—Reinforced Plastic Panels

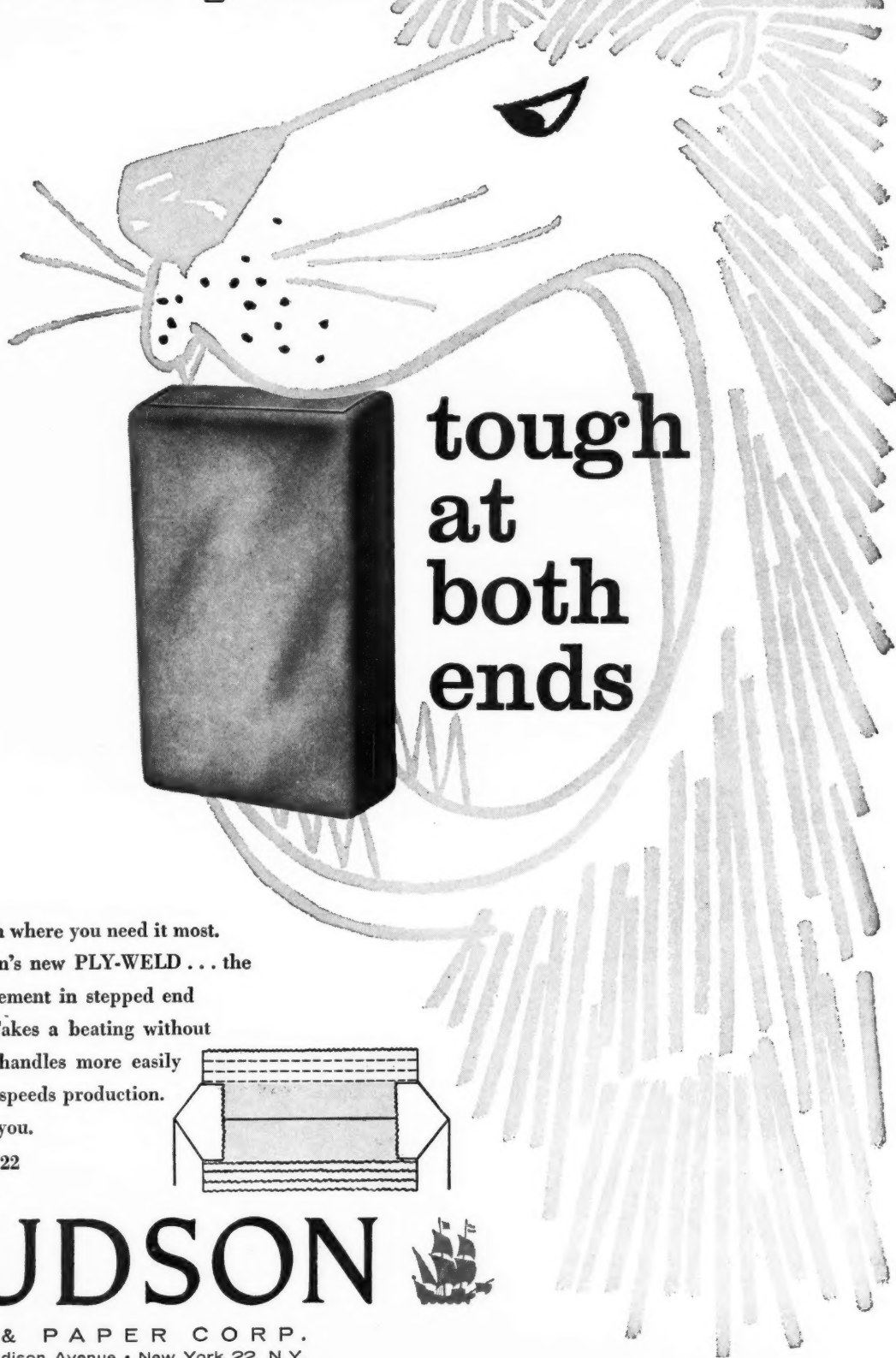
Monsanto Chemical Co., has available information on the installation and durability of these handy transparent plastic panels. Ideal for fertilizer plants where light is desired without bothering to install expensive framing or maintenance of colors. Weighing only 8 oz. per square foot, they can be sawed like wood, nailed and screwed into place. For additional information on these reinforced panels just

CIRCLE 54 ON SERVICE CARD

See pages 56 & 57 for information on these Reader Service Numbers—

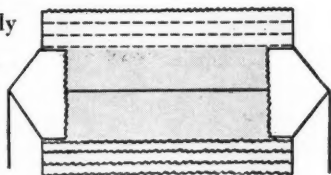
- | | |
|---------------------|--------------------|
| 55—Payloader Bucket | 59—Filling Machine |
| 56—Bete Nozzles | 60—SS Tee Valve |
| 57—Drum Heater | 61—New pH Meter |
| 58—Deltainers | 62—Hammer Mill |
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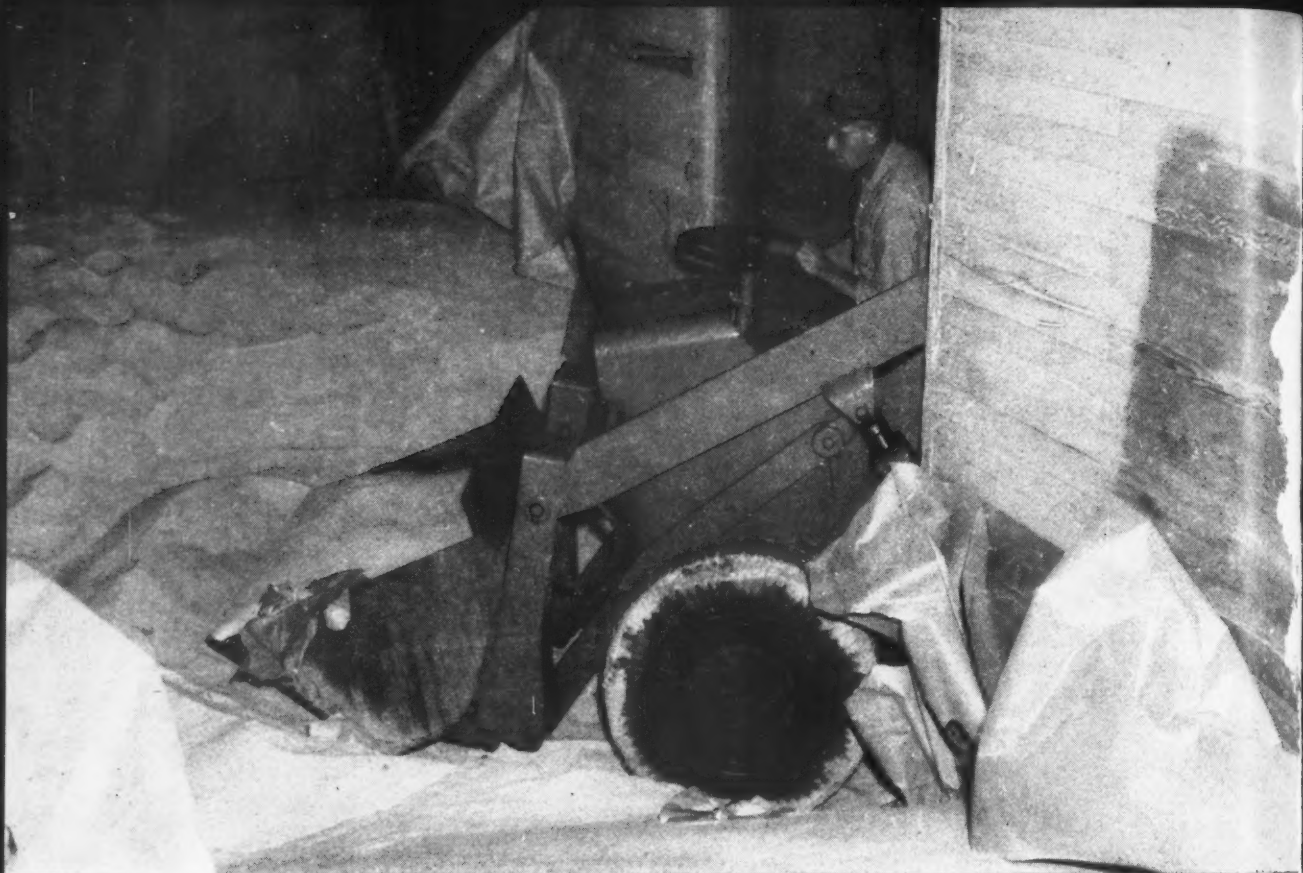
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FEBRUARY, 1957



Boxcar has only 5' door, sand piled level, floor rough, yet . . .

Michigan Tractor Shovel unloads entire 60 tons in less than 100 trips

"This was about the toughest boxcar unloading job a tractor shovel could get!" describes this Midwestern foundry's plant engineer.

"The car had a narrow 5-foot Canadian-type single door. Its floor was fairly rough. Its load of 60 tons of silica sand was piled almost level. Frankly, we didn't think our Michigan could unload it, but decided to give it a try."

200 ft cycles in 1 minute

"First thing we noted," says the operator, "was that Michigan's greater bucket capacity, power and instant shift more than made up for whatever slight maneuverability advantage smaller tractor shovels are supposed to have. Turning past the narrow door slowed the Michigan a bit, but I was always able to get in and out of the car without trouble. Loads averaged 10 to 15 cubic feet of sand each. Cycles of 200 feet between unloading point and boxcar took only a minute or two."

Unloads regular cars under 80 trips

Entire job took only 97 trips. Time compared favorably to unloading 50 to 60 tons of sand from a car with 6-foot door. "We receive 15 to 20 of these per week," says the engineer; "Michigan rarely needs more than 75 to 80 trips to unload any of them." Other Michigan assignments include cleaning the foundry floor . . . moving new sand from hoppers to shakeout bin . . . supplying the gray iron moulders.

Expect longer life

"We first noticed this 15 cubic foot Model 12B at a trade show," reveals another company official. "Here we got convincing proof of the longer machine life its planetary axles and torque converter would provide. We also felt its higher lift would make it easier to do some of our loading and unloading."

And less trouble

"Lower repair time was another ex-

pected gain," says the general foreman. "We've had Clark fork lifts and industrial trucks for years; they outlast all others by far. When we saw the same ruggedness built into Clark's Michigan Tractor Shovel, we bought it."

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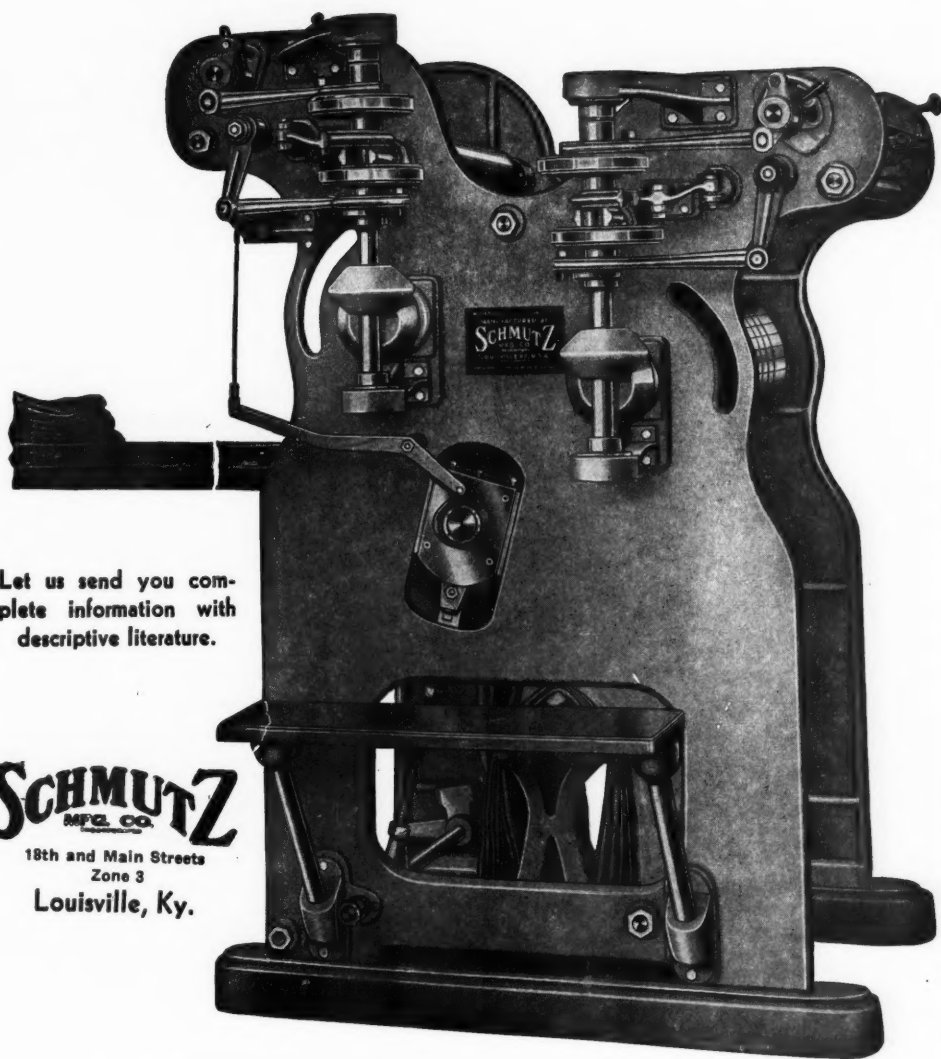
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Nitroform is a REAL MONEYMAKER!

You'll find that by adding Nitroform to your mixed fertilizer products profits will be greater and that satisfaction and results will mean repeat sales.

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Look at the record! 30 inch model reduced titanium dioxide to 1 micron and finer at solid feed rate of 2250 lbs. per hr. 24 inch model reduced DDT (50%) to 3.5 average microns — 1200-1400 lbs. per hr. 8 inch model reduced Procaine—Penicillin—to 5 to 20 microns—up to 20 lbs. per hr. Couldn't you use milling performances like these?

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no problems of attritional heat. Centrifugal force keeps over-sized particles in the grinding zone. Cyclone action in the central section classifies and collects the fines for bagging.

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EPTC



Above is a check plot of sweet corn, shown three weeks after seeding. It is the same experiment which is shown at lower left.



Photo at left shows sweet corn which was treated with EPTC at 10 lbs./acre for control of red root pigweed. Picture was taken three weeks after seeding and treatment.

Below is a check plot of soybeans showing severe infestation of red root pigweed four weeks after seeding and treatment. See photo on next page for EPTC treated soybeans.



Still experimental,
EPTC is a Stauffer
Chemical development,
and shows great promise
in the control of grassy
and broad-leaf weeds

BOTH pre and post-emergence control of such hard to control weeds as red-root pigweed and purslane are now possible with a new experimental herbicide called EPTC, which is short for Ethyl N,N-di-n-propylthiolcarbamate. In addition, pre-emergence work has proven successful on forage legumes such as clover and alfalfa to vegetables such as corn, tomatoes, carrots and beets.

Since tests have been conducted for approximately two years the chemical residual life has been relatively short, but weed control has been obtained for periods of up to five months. Because of the chemical's ability to penetrate to a considerable depth, deep killing action has been the result.

Herbicidal Action

EPTC has been effective in controlling all of the grasses and many of the major broadleaf weeds against which it has been tested. To be effective it



Photo above shows control of red root pigweed in a soybean field four weeks after seeding and treatment with 5 lbs./acre EPTC.

must be applied before the weeds emerge. In controlled experiments EPTC has been effective against grassy weeds when applied at any stage of germination or growth prior to emergence. Resistant crops can be safely treated at any stage of germination or growth (including established plants). Susceptible crops and weeds have shown no injury when treated any time after the early seedling stage.

Factors Affecting Performance

Soil surface requirements are similar to those of most herbicides that are effective in controlling weeds before they emerge, in that the seed bed should be smooth, preferably rolled with a roller

immediately behind the planter and before the spray nozzle, for best results.

To achieve the proper results the quantity of water required to treat an acre ranges between 20 and 80 gallons. It has been relatively ineffective when applied in volumes of 10 gallons or less per acre.

In various field trials EPTC has been effective over a wide range of soil moisture and rainfall conditions. In one field test, application was made to dry sandy soil, and the soil remained dry until it rained four weeks after application. Weed control was excellent with no crop injury.

Rainfall following application has had no adverse effect on the action of EPTC. Good weed control was obtained where 2" of water was applied immediately after seeding and application with no crop injury.

Performance data to date indicates that rates required for good weed control are the same for all soils. Tests involving EPTC prove that the compound is equally effective on a wide range of soil types including a sandy soil to a muck (peat). Under greenhouse conditions where temperatures of 70° F to 90° F were used to establish differences of activity it was found that no variances occurred. In field trials EPTC has been equally effective at soil temperatures ranging from 60° F to 102° F.

Pre-Emergence Greenhouse Results

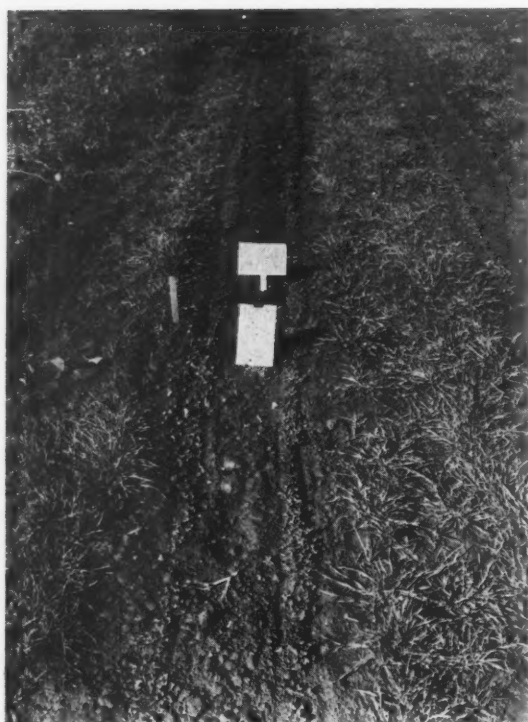
In control tests with green and giant foxtail in corn, EPTC was applied at rates of 1, 1½, 2 and 3 pounds to 80 gallons of water an acre as a pre-emergence treatment to field corn overseeded with green and giant foxtail. Five replications were used with each replicate consisting of one flat seeded to three rows of corn with half the flat overseeded to green foxtail and the remaining half to giant foxtail. The corn was seeded one-half-inch deep and the fox-tails one-quarter-inch deep in Santa Cruz loam soil. Application was made twenty-four hours after seeding and the results (average of five replications) obtained 3½ weeks after treatment are given below:

Control of Green and Giant Foxtail in Corn

Effect on Field Corn			Per Cent Control of	
Rate of EPTC/Acre	% Germ.	Growth*	Green Foxtail	Giant Foxtail
0 lbs.	100	10	0	0
1 lbs.	100	10	46	66
1½ lbs.	100	10	74	89
2 lbs.	100	10	92	94
3 lbs.	100	10	95	100

*Growth is rated on a scale of 0-10 with 0 being no growth and 10 being normal growth compared to check.

Tests involving EPTC to establish its efficiency at various depths in controlling green foxtail were run at 2½ pounds per 40 gallons an acre to green foxtail



Control of annual rye grass, Calif. red oats and annual blue grass in crimson clover eight weeks after seeding and treatment with 2½ lbs. per acre of EPTC. Rows 12 inches apart with a 24 inch band treated.

seeded ¼, ½, 1, 2 and 3" deep in Santa Cruz loam soil. Two replications (one 14" x 20" flat per replicate) were used for each treatment including checks for each depth. Normal watering followed application and the results three weeks following treatment are given below.

% Control of Green Foxtail at Varying Seeding Depths

Rate of EPTC/Acre	¼"	½"	1"	2"	3"
0 lbs.	0	0	0	0	0
2½ lbs.	100	100	100	100	100

Pre-Emergence Field Results

EPTC was applied at 5 pounds per 80 gallons of water an acre to twenty-five crops seeded in Sorrento loam soil, to establish crop resistance. Immediately following application 2" of water was applied by sprinkler irrigation. Four replications, with each replicate being 10' of row were used. The data presented below were obtained three weeks after treatment.

Golden Cross sweet corn was seeded and then cross seeded with green foxtail and wild oats. EPTC was applied immediately after planting at 0, 5 and 10 pounds per acre. Each treatment was replicated

Resistance of Various Crops to 5 Lbs./Acre of EPTC

Crop	Growth*	% Stand	Crop	Growth*	% Stand
Beets, Table	9	100	Pea	9	100
Buckwheat	6	52	Peppers	7	67
Cabbage	7	88	Radish	7	100
Cantaloupe	9	95	Snap Beans	10	125
Carrot	10	100	Soybeans	9	117
Corn, Sweet	10	133	Stock	8	128
Cotton	10	123	Squash	9	75
Eggplant	8	100	Sugar Beets	10	100
Lettuce	7	100	Tomato	10	100
Lima (Sm. seeded)	10	80	Wheat	7	90
Onion	10	109	Zinnia	10	117

*Growth is rated on a scale of 0-10 with 0 being no growth and 10 being normal growth compared to check.

six times with each replicate consisting of three rows 20' long. Data on weed control and yields are presented in the following tables.

Effect of EPTC on Corn, Wild Oats, Green Foxtail and Pigweed

Rate/A. of EPTC	2½ Weeks After Treatment		8 Weeks After Treatment			
	Corn		% Control		% Control	
	% Stand	Growth*	Green Foxtail	Wild Oats	Green Foxtail	Wild Oats
0 lbs.	100	10	0	0	0	0
5 lbs.	109	10	100	100	85	100
10 lbs.	104	10	100	100	97	100

*Growth is rated 0-10 with 0 being no growth and 10 being normal growth compared to the check.

Effect of EPTC on Corn Yield*

Picking	0 Lbs./Acre		5 Lbs./Acre		10 Lbs./Acre	
	No. Ears	Aver. Length of Ears	No. Ears	Aver. Length of Ears	No. Ears	Aver. Length of Ears
1st	54	6.82"	99	6.56"	122	6.62"
2nd	38	5.95"	101	6.31"	79	6.18"
Aver.	46	6.38"	100	6.43"	100	6.42"

*None of the treatments were cultivated.

Rows of crimson clover, below left received 5 lbs./acre of EPTC; at right is the check. Shows control of annual blue grass, Shepherds purse, henbit, chickweed & redroot pigweed 11 weeks after seeding and treatment.



In tests for the control of grasses and broadleaf weeds in clover, EPTC was applied at rates of 0, 2½, 5 and 10 pounds per 40 gallons per acre immediately after planting Crimson clover in Sorrento loam soil. Two replications were used with each replicate being two rows 110' long. Twenty-four hours after application 1¼" of water was applied by sprinkler irrigation. Data on clover stand and growth and weed control six weeks after application are presented in the following table.

Control of Grasses and Broadleaf Weeds in Clover

Clover	% Stand Growth	Rate of EPTC			
		0 Lbs.	2½ Lbs.	5 Lbs.	10 Lbs.
		100% 10	152% 10.3	150% 8.9	132% 6.5
Rye Grass	Weeds per Square Foot	45.1	0.3	0.0	0.0
Oats		11.1	0.45	0.0	0.0
Pigweed,					
Red-root		10.1	1.5	0.0	0.0
Annual Blue					
Grass		96.5	1.6	0.0	0.0
Henbit (Dead					
Nettle)		5.0	0.0	0.0	0.0
Shepherd's					
Purse		4.5	0.0	0.0	0.0
Chickweed		3.5	0.75	0.0	0.0

Post-Emergence Greenhouse Results

Eight crops and four weeds received a post-

emergence application of EPTC at a rate of 5 pounds per 80 gallons per acre. Two crops (two rows of each) were planted per flat and four flats of each pair of crops were used. Two flats of each pair were overseeded to rye grass and wild oats and the other two flats overseeded to pigweed and buckhorn plantain. The flats overseeded with the grasses were sprayed ten days after planting and the flats seeded to pigweed and plantain were sprayed fourteen days after planting. Observations immediately after spraying showed that all plants were thoroughly wet with the spray. The eight crops sprayed were sweet corn, cotton, snap beans, oats, carrots, tomatoes, sugar beets and radish. Growth and injury observations three weeks after application showed no reduction in growth and no injury to any of the crops or weeds.

Post-Emergence Field Results

The following crops have been tested throughout the country with sprays of EPTC at various stages of growth at rates up to 10 pounds per acre without injury.

Crimson clover	Strawberries	Heather
Corn	Chrysanthemums	Stock
Cotton	Cyclamen	▲



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Latest Developments and
1957 Recommendations

NORTH Carolina State College was host to over 200 guests on January 10 during the 1957 Pesticide School meeting. Representation included chemical dealers, formulators, manufacturers, farm superintendents and county agents.

At the opening of the two day affair Dr. D. S. Weaver, director of the college's Agricultural Extension Service, addressed the group. Other members on the N. C. State staff such as H. R. Garriss, in charge of plant pathology extension, served as program chairman, while J. C. Wells, plant pathology extension; G. C. Klingman, Field Crops Department, and W. M. Kulash, Entomology Department, presided over the instructional sessions.

Talks by McNew, DeWitt

Two outstanding out-of state speakers were featured. Dr. George M. McNew, managing director of the Boyce Thompson Institute of Plant Research, Inc., of Yonkers, N. Y. reviewed the search for the perfect fungicide. Dr. James B. DeWitt, chemist-supervisor with the U. S. Fish and Wildlife Service, Patuxent Research Reserve, Laurel, Md. discussed new developments in rodent repellents and rodenticides.

Among the topics of discussion during the opening morning's session were fungicidal control of fruit disease, C. N. Clayton; some problems with cottonseed treatment, H. R. Garriss; soil treatments for disease control in plant beds, C. J. Nusbaum and N. N. Winstead; disease control in floral crops, Robert Aycock; and control of Southern stem rot, J. C. Wells, all of the college's Plant Pathology Department.

On the afternoon of the opening day herbicides were discussed. Orvin E. Rud dealt with the herbi-

cide situation in peanuts, cotton and soybeans; Glenn C. Klingman, with small grain and corn; and W. G. Westmoreland covered herbicides around the home and new approaches to field problems.

Latest Research Findings Presented

In the final session of the meeting the N. C. State Entomology Department members presented their latest findings from research. On tobacco pests, R. L. Rabb and F. E. Guthrie; cotton pests, W. J. Mistic; G. F. Turnipseed on apple pests; forage crop pests, J. R. Dogger; C. H. Brett on vegetable pests; and soil insects, W. M. Kulash.

George D. Jones of Entomology Extension reviewed major changes in control recommendations. These changes are all included in the 1957 Pesticide Manual which was compiled by the college for those attending the course.

Cooperative insect surveys were reported on by M. H. Farrier, Entomology Department. A new addition to the Pesticide School, Farrier explained the function of the survey—to gather data, identify insects, to conduct periodic checks and to forward the State's latest findings to Washington, D. C. for publication.

Bees and other pollenating insects were the final topic of discussion. W. A. Stephen, Entomology Extension, pointed out the dangers of certain insecticides to necessary insects.

The 1957 Pesticide School, conducted by the college's School of Agriculture and College Extension Division, adjourned following a question and answer period.

Representatives from 14 states returned home to continue their fight against production losses in agriculture due to pests. ▲

CHEMICAL treatments are successfully used by tobacco growers for control of weeds and root-knot nematodes (*Meloidogyne* spp.), two of the major plant bed problems in the southeastern tobacco areas. Studies of various soil amendments for this purpose have been followed in South Carolina for a number of years.¹ Surface drench Applications with Vapam and N521 (Stauffer Chemical Company), and Mylone (Crag 974, Carbide and Carbon Company), gave effective weed and nematode control in preliminary trials. Soil treatments in Florida with Vapam were reported by Magie⁴ as fungicidal against *Stromatinia gladioli*. Taylor⁵ reported Vapam as a promising herbicidal-fungicidal treatment in tobacco plant beds in Connecticut. Lautz² reported Vapam (Stauffer N-869) as fungicidal against tobacco black shank (*Phytophthora parasitica* var. *nicotinae*) in soil treatments in greenhouse experiments. Lear³ secured effective control of root-knot nematodes with surface drench treatments in greenhouse flats.

Tobacco plant beds were treated with these and others oil amendments in comparative trials in 1955 and 1956. Bed areas were prepared by plowing, disking, and leveling during September or October and after treating were left undisturbed until the following January, at which time fertilizer was worked lightly into the top 1 to 2 inches of soil. Beds were then seeded. Soil temperatures for 2 weeks following treatment were in the general range of 60 to 70° F as indicated by soil thermograph records. Materials applied as surface drenches were suspended or dissolved in water in a 3-gallon sprinkler can and dispersed at the rate of 1 gallon of water per square yard. Injected liquids were placed 6 inches deep with a soil applicator and spaced in a 12 x 12-inch measured pattern. In treatments that were combined with calcium cyanamid, the latter was first mixed with the soil 2 to 4 inches deep. Surface drenches were then applied as above, 2 to 4 days after calcium cyanamid. In combinations with Vapam or Mylone, these were applied as a surface drench following calcium cyanamid. Methyl bromide gas was released under a polyethylene plastic cover left over the treated area for 48 hours.

Table 1 presents data from 2 years' trial at one location at the Pee Dee Experiment Station at Florence. The plant bed area had a dark organic soil and the location was a well-protected moist woods representing a plant bed site frequently used in South Carolina. Natural weed populations were low owing to the protected woods area. The soil had only traces of root-knot infestation, therefore, this location was not used to evaluate root-knot control. Significant data were obtained on weed control, tobacco plant stands, yield of transplants and overall effect on plant growth. Results in Table 1 show that tobacco stands were generally lower in 1956. This was largely due to the lower seeding rate used that year.

Weed and Root Knot Control

in tobacco plant beds

By T. W. Graham*

During both years, plant stands in treated plots were equal to or better than in untreated plots. In 1955, Vapam or Mylone combined with calcium cyanamid gave satisfactory weed control and plant yields, as did the combination of calcium cyanamid with ethylene dibromide (W40). Each of these except the Mylone-cyanamid combination was comparable in plant yields to methyl bromide. Methyl bromide has consistently been a most satisfactory combination herbicidal-nematocidal treatment.

In 1956, these combinations were not repeated but further trials with Mylone, N521 and Vapam, each used alone, gave satisfactory weed control and plant yields, comparing favorably with results from methyl bromide. Injected Vapam (12 x 12-inch spaced applications) gave satisfactory plant yields, but not always good weed control (Table 2). Plant growth was not retarded following treatment with Vapam, Mylone or N521 used in combination with cyanamid in 1955 or used alone in 1956; on the contrary, tobacco plants in most cases showed more vigorous growth and were somewhat larger than those grown in methyl bromide—treated or in the untreated plots. In 1956, there were significant increases in plant yields from plots treated with methyl bromide, Mylone, N521 and injected Vapam above yields from untreated plots. The relatively lower plant yields from the Vapam drench plots were in part due to a location effect where water stood long enough on a portion of the beds to cause reduced stands. Injected applications of DCB 60 or surface drench with PRD failed in weed control, but the former had some nematocidal value.

A second plant bed location with sandy loam soil was used in further trials. This bed site was located near a greenhouse and was therefore partially pro-

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tected from winds. Otherwise, the area was open. Root-knot nematode infestation and weed populations were maintained at a relatively high level so that the most significant information from this area was on weed and nematode control together with effects on plant stands. Plant yields were not recorded. Results are presented in Table 2. Surface drench treatments with Vapam gave effective weed and root-knot control at both rates of 1 and 2 pounds per 100 square feet. Injected Vapam gave good nematode control but was not satisfactory in weed control. Mylone was effective in both respects at the 2-pound dosage rate but was less so at 0.6 pounds. N521 gave essentially the same results at comparable dosages. N521 and Mylone are reported to have the same active chemical composition. Trials here showed them to possess much the same values as herbicides; Mylone, however, was a slightly better nematocide in 1955, but the reverse was true in 1956. The differences, however, are small and probably not significant.

During 1956, additional trials with Vapam and N521 were conducted in cooperative tests with tobacco growers in three counties in South Carolina. All were surface drench treatments applied in October and November 1955, as already described. The

information from these treatments consisted of weed and plant stand counts and observations on early plant growth. Results are shown in Table 3. At the Drew location weed control was not satisfactory, although Vapam at the 2-pound rate gave fair control. The procedure at this location was immediate application of the drench after the soil was turned with a tractor-drawn disk and then raked level by hand. The soil was a dark organic type. Tobacco stands were better in the treated beds (74 to 98 per square foot) than in untreated (61 per square foot). The Jones location, also a dark organic soil, was prepared several weeks in advance of treatment. Weed control here was satisfactory. The two rates of Vapam gave the same weed control, but with N521 1.4 pounds was better than 0.73 pound. With one exception, plant stands were best in treated plots. None of the treatments at these locations showed retarded growth of tobacco plants.

At the Rogers location, unlike all other treated locations, growth in all treated beds was severely retarded. Stunting was somewhat more severe with N521 than with Vapam. This location was in an unprotected open area with a sandy loam soil. Beds were prepared well in advance of treatments. Treatments were applied November 2. The first rains

Table 1. Tobacco plant bed soil treatment for chemical control of weeds and root knot on dark organic soil.

Treatment	Pounds per 100 sq. ft. Active	Tobacco Plant Stands		Weeds per sq. ft.		Plant Yields sq. ft.	
		1955 ^a	1956 ^b	1955	1956	1955	1956
Methyl bromide gas	1.0	99	51	0.6	0.7	39	30
Calcium cyanamid and ethylene dibromide	11.0	100	—	0.3	—	34	—
(W40)	20 gals/acre						
N521 (surface drench) ^c	1.0	110	58	0	0.6	29	34
Mylone (974) (surface drench) ^d	1.0	—	42	—	0	—	29
Mylone and Calcium cyanamid	1.0	77	—	0	—	20	—
	5.5						
Vapam ^e and Calcium cyanamid	1.0	117	—	0	—	32	—
	5.5						
Vapam (injected)	1.0	—	48	—	5	—	31
Vapam (surface drench)	1.0	99	47	4	0	22	26
Control (untreated)	—	47	50	26	33	18	21
L. S. D. 5%		n.s.	n.s.	—	—	—	8.4
1%		n.s.	n.s.	—	—	—	10.4

^a The 1955 data are averages from duplicate plots each 16 sq. yds. in area.

^b The 1956 data are averages from 4 replicated and randomized plots each 5.6 sq. yds. in area.

^c 3, 5, Dimethyltetrahydro-1, 3, 5, 2, H-thiadiazine-2-thione.

^d Same as N521.

^e Sodium N methyl dithiocarbamate dihydrate (formerly N869).

Table 2. Chemical soil treatments on tobacco beds in a sandy loam soil.^a

Treatment	Pounds per 100 sq. ft.	Tobacco Plants per sq. ft.		Weeds per sq. ft.		Root Knot Index	
		1955	1956	1955	1956	1955	1956
Vapam (surface drench).....	0.5	78	—	4	—	5	—
Vapam (surface drench).....	1.0	—	47	—	4	—	0
Vapam (surface drench).....	2.0	—	32	—	2	—	0
Vapam (injected).....	1.0	—	38	—	22	—	0.6
Mylone (surface drench).....	0.6	69	66	2	3	0.7	4.2
Mylone (surface drench).....	2.0	—	47	—	4	—	0
N521 (surface drench).....	0.6	61	39	2	2	3.7	1.1
N521 (surface drench).....	1.9	—	37	—	3	—	0.5
DCB 60 ^b (injected).....	30 gal/a	—	21	—	70	—	5.6
PRD ^c (surface drench).....	15 lbs/a	—	26	—	77	—	55.8
Control (untreated).....	—	81	18	75	126	10.0	42.0

^a Treated plots were in duplicate, each 20 sq. ft. in area. Counts of tobacco plants and weeds were made from four readings from each plot. One reading consisted of counts on all tobacco plants and weeds within a one sq. ft. area. Averages here are from 2 series of readings on February 28 and March 27. Root knot readings were taken May 22. 0 = no root knot, 100 = maximum root knot.

^b Mixture of dichlorobutenes.

^c Composition not revealed.

were 0.46 inch on November 11 and 0.86 inch on November 20. Total rainfall for November was 2.52 inches. Lear³ stated, "It appears that if this chemical (Vapam) is added to saturated soil it is retained in the surface unless additional water is added to carry it through the soil mass." The soil at the Rogers location was not saturated either when treated or during the following 9 days; therefore, this factor apparently was not involved. Other possible factors responsible for the retarded growth observed at the Rogers location did not appear to be related to the physical condition of the soil as compared with the four remaining locations where no stunting occurred.

1. Graham, T. W., and E. E. Clayton. 1956. Studies of chemical soil treatment for control of weeds and root knot in tobacco plant beds. South Carolina Agr. Exp. Station. Bul. 434.
2. Lautz, William. 1956. Efficacy of soil treatments with nine chemicals in tobacco black shank control. Plant Dis. Repr. 40: 855-860.
3. Lear, Bert. 1956. Results of laboratory experiments with Vapam for control of nematodes. Plant Dis. Repr. 40: 847-852.
4. Magie, R. O. 1956. Gladiolus Stromatinia disease controlled by soil treatments and cultural methods. (Abstr.) Phytopathology 46: 19.
5. Taylor, G. S. 1956. Tobacco seed bed treatments for control of weeds and soil borne pathogens. (Abstr.). Phytopathology 46: 242. ▲

Table 3. Chemical treatment for weed control in tobacco beds in cooperative trials with growers. 1956.

Treatment and Dosage	Cooperator and Plant Counts						Average	
	Drew		Jones		Rogers		Weeds	Tobacco
	Weeds sq. ft.	Tobacco sq. ft.	Weeds sq. ft.	Tobacco sq. ft.	Weeds sq. ft.	Tobacco sq. ft.		
Vapam 1 lb. 100 sq. ft.	21	74	3	27	1	29	8.3	43.3
Vapam 2 lbs. 100 sq. ft.	8	78	3	20	0	28	3.6	42.0
N521 0.74 lbs. 100 sq. ft.	24	100	5	29	0	27	9.6	52.0
N521 1.4 lbs. 100 sq. ft.	15	98	3	36	0	14	6.0	49.3
Control (No treatment)	58	61	50	23	31	29	46.3	37.6

Mississippi Insect Control Conference

AN ANNOUNCEMENT of the cotton insect control recommendations and warnings on the dangers of phosphate insecticides highlighted the third annual Mississippi Insect Control Conference at Mississippi State College, January 10-11.

A much greater use of phosphates in boll weevil control was predicted in case heavy infestations build up in the 1957 crop.

While these materials are recommended, it was emphasized that phosphates are just as effective in controlling man as they are in controlling insects.

A recommendation of the conference called for all insecticide labels to contain not only suggested uses of material, but also a "do not use for . . ." warning. All precautions should be specified on labels.

Insecticides recommended for boll weevil control in Mississippi for 1957 include aldrin, BHC, calcium arsenate, dieldrin, endrin, toxaphene, heptachlor, malathion, guthion and methyl parathion. All except calcium arsenate are also recommended as spray materials.

Dr. M. E. Merkl, USDA entomologist at the Stoneville Branch Experiment Station, stated that guthion gave the most outstanding results in boll weevil control during 1956 of any other insecticides.

"Applied at one-fourth to one-half pound per acre, it gave excellent results in all locations," he said.

Dr. Johnnie Johnston of the National Cotton Council at Memphis, Tenn., agreed that boll weevils have become resistant to some insecticides. He pointed out that the chemical industry cannot continue to produce new chemicals as fast as boll weevils become resistant. A control program must be developed that is not dependent on chemicals alone. He named early stalk destruction as the most important single item in such a program.

In reporting highlights of cotton insect control research at the Stoneville Branch Station, Dr. Merkl indicated that Thimet and Bayer 19369 used as a systemic seed treatment lowered germination of seed, gave excellent control of thrips, made for faster early growth of the cotton plant, but retarded fruiting. He concluded that possibly reduced stands and retarded fruiting may offset any benefits from early growth and thrips control.

A. L. Hamner, entomologist at Mississippi State College, pointed out that poisoning to protect blooms after the first four or five weeks of blooming may not be profitable.

Early season boll weevil control is especially important, he said. Around 89 per cent of the crop is set from blooms in the first five weeks or less of blooming. He did indicate that poisoning should be continued to protect bolls set from these early blooms.

Another highlight of the conference was the presentation of the Mississippi Entomological Society Distinguished Service award plaque to Professor R. W. Harned of Washington, D. C. The presentation was made for the Society by Dr. Clay Lyle, dean and director, Division of Agriculture at Mississippi State College.

In making the presentation Dr. Lyle cited the more than 50 years of service to entomology by Professor Harned, who is known as the father of professional entomology in the South. For several decades Professor Harned has been a leader in state and Federal cotton insect control research.

A panel of commercial pest control operators indicated that resistance of roaches, especially to the chlorinated hydrocarbons is a major problem with them. Where chlordane and DDT formerly gave almost absolute control, they no longer have any effect on some species.

Officers of the Mississippi Entomological Society elected during the annual meeting are Ed Broadus of Niagara Chemical Division, Jackson, president; Dr. Merkl, vice president, and A. G. Bennett, leader extension entomology, State College, secretary and treasurer.

Directors are Gene Merrill, entomologist with General Chemical Company, Greenville; C. A. Wilson, entomologist at Mississippi State College; W. R. Smith of Shell Chemical at New Orleans and David Young, assistant extension entomologist, immediate past president. ▲



LEFT: Officers of the Miss. Entomological Assn. for 1957 are Ed Broadus, pres.; Dr. M. E. Merkl, vice pres.; A. G. Bennett, secretary. RIGHT: Distinguished service award of MEA is presented to R. W. Harned by Dr. Clay Lyle.



Preliminary Report:

1955-56 Fertilizer Consumption in The United States

By Walter Scholl, Esther I. Fox, Hilda M. Wallace and Florence Crammatte

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THE estimated consumption of commercial fertilizers in the United States and Territories (Hawaii and Puerto Rico) during the year ended June 30, 1956, was 22,096,000 short tons (Table 1). This was a decrease of 2.8 per cent (628,000 tons) from the quantity used in 1954-55. Consumption of mixed fertilizers amounted to 14,749,000 tons—a decrease of 3.9 per cent (599,000 tons)—and of materials for direct application 7,347,000 tons—a decrease of 0.4 per cent (29,000 tons). Included in the materials for direct application is 6,568,000 tons of products containing one or more of the primary plant nutrients (N, available P_2O_5 , K_2O) and 779,000 tons of secondary and trace nutrient materials. The tonnage of secondary and trace nutrient materials, of which approximately 85 per cent was consumed in the Pacific region, was practically the same as that in 1954-55.

There was a decrease in the total fertilizer consumption in seven of the nine regions of the continental United States and in the Territories. Slight gains occurred in the West South Central and Pacific regions. Approximately 79 per cent of the decrease in total fertilizer consumption occurred in the Middle Atlantic, South Atlantic and West North

Table 1.—Est. Fertilizer Consumption in the U. S., Year Ended June 30, 1956, with Comparisons

Region	Consumption ¹			Change from 1954-55		
	Mixtures 1,000 tons	Materials ² 1,000 tons	Total 1,000 tons	Mixtures Percent	Materials Percent	Total Percent
New England ³	353	70	423	-3.4	-6.4	-3.9
Middle Atlantic ⁴	1,775	205	1,980	-6.5	-11.0	-7.0
South Atlantic ⁵	4,787	1,090	5,877	-2.9	-5.4	-3.3
East North Central ⁶	3,369	1,128	4,497	-4.3	+13.3	-0.4
West North Central ⁷	1,177	865	2,042	-8.4	-3.9	-6.5
East South Central ⁸	1,972	914	2,886	-2.0	-1.0	-1.7
West South Central ⁹	701	666	1,367	-1.0	+1.1	+ ¹⁴
Mountain ¹⁰	52	342	394	+0.4	-8.5	-7.4
Pacific ¹¹	314	1,917	2,231	+5.6	+0.5	+1.2
Continental U. S.	14,500	7,197	21,697	-3.8	-0.2	-2.6
Territories ¹²	249	150	399	-10.8	-6.2	-9.1
Total: 1955-56.....	14,749	¹³ 7,347	22,096	-3.9	-0.4	-2.8
1954-55.....	15,348	¹³ 7,375	22,723	0.0	0.0	0.0
1953-54.....	15,541	¹³ 7,232	22,773	+1.3	-1.9	+0.2

¹ Includes fertilizers distributed by Government Agencies.

² Includes: Ground phosphate rock and colloidal phosphate, basic slag, secondary and trace element materials, such as borax, metallic salts, sulfur, gypsum, etc., used as separate materials. Does not include liming materials or the quantity of materials used for manufacture of commercial mixtures. ³ Maine, N. H., Vt., Mass., R. I., Conn. ⁴ N. Y., N. J., Pa., Del., D. C., Md.,

W. Va., ⁵ Va., N. C., S. C., Ga., Fla. ⁶ Ohio, Ind., Ill., Mich., Wis. ⁷ Minn., Iowa, Mo., N. D., S. D., Neb., Kan. ⁸ Ky., Tenn., Ala., Miss. ⁹ Ark., La., Okla., Tex. ¹⁰ Mont., Idaho, Wyo., Colo., N. Mex., Ariz., Utah, Nev. ¹¹ Wash., Oregon, Calif. ¹² Hawaii, P. R. ¹³ Materials not guaranteed to contain N, P_2O_5 , or K_2O included in 1955-56 total, 779,000 tons; 780,308 tons in 1954-55; 615,513 tons in 1953-54. ¹⁴ Less than 0.05 percent.

Central regions where nearly 45 per cent of the tonnage of all fertilizers was used. These three regions also accounted for most of the respective decreases in mixed fertilizers and materials.

Among the individual areas, the East North Central region showed the largest decrease in mixed fertilizers (152,000 tons), but this was largely offset by the increase in use of materials (132,000 tons). In only the Mountain and Pacific regions was there an increase in the use of mixed fertilizers. However, the mixtures used in these two regions comprised less than 15 per cent of the tonnage of all fertilizers used therein and less than 3 per cent of the total consumption of mixtures in the United States. The consumption of fertilizer materials for direct application showed increases in only three regions—East North Central (13.3 per cent), West South Central (1.1 per cent) and Pacific (0.5 per cent).

Of the various classes of materials used for direct application an increase in consumption was shown only by the phosphate products (Table 2). Among such products the greatest increase (nearly 55 per cent) was in phosphate rock, chiefly in the East North Central and West North Central regions where it is mostly used. The consumption of normal superphosphate appears to have decreased about 15

per cent, while the other two principal phosphate materials—concentrated superphosphate and the ammonium phosphates (11-48, 13-39, 16-20)—showed little change from their use in 1954-55.

The consumption of anhydrous ammonia for direct application is estimated to have totaled 431,000 tons, an increase of 21.8 per cent over the use in 1954-55 (Table 3). The increases, occurring in all regions, were greatest for the East South Central, West South Central and Mountain regions where they were approximately 40 per cent in each area. The use of aqua ammonia increased 30.2 per cent, but the consumption of nitrogen solutions was nearly the same as in 1954-55.

Primary Plant Nutrients

The estimated quantity of primary plant nutrients contained in all fertilizers consumed in the United States and Territories was 6,081,000 tons (Table 4). This was 39,000 tons (0.6 per cent) less than in 1954-55. The total for 1955-56 comprised 1,952,000 tons of nitrogen, 2,240,000 tons of available P_2O_5 and 1,889,000 tons of K_2O . These quantities represent decreases of 9,000 tons (0.4 per cent) for nitrogen and 44,000 tons (2.0 per cent) for available P_2O_5 and an increase of 14,000 tons (0.8 per

Table 4.—Estimated Content of Primary Plant Nutrients in All Fertilizers Consumed in United States, Year Ended June 30, 1956, with Comparisons

Region ¹	Quantity				Change from 1954-55			
	N	Available P_2O_5 ²	K_2O	Total	N	Available P_2O_5	K_2O	Total
	1,000 tons	1,000 tons	1,000 tons	1,000 tons	Per-cent	Per-cent	Per-cent	Per-cent
New England.....	28	48	44	120	+3.3	+0.2	-3.0	-0.3
Middle Atlantic.....	120	219	188	527	-0.9	-8.9	-5.2	-5.9
South Atlantic.....	387	464	494	1,345	-2.7	-2.7	+1.2	-1.3
East North Central.....	270	596	594	1,460	+1.4	+3.5	-1.7	+1.0
West North Central.....	241	314	180	735	-14.0	-11.6	+9.8	-8.0
East South Central.....	282	254	295	761	+4.0	-1.4	+3.4	+2.0
West South Central.....	214	160	87	461	+10.9	+4.2	+4.9	+7.4
Mountain.....	75	63	3	141	-1.1	+4.9	+16.2	+1.8
Pacific.....	278	103	35	416	+4.8	+5.9	+13.3	+5.7
Continental U. S.....	1,895	2,221	1,850	5,966	-0.1	-1.9	+0.9	-0.5
Territories.....	57	19	39	115	-9.1	-8.0	-4.1	-7.3
Total: 1955-56.....	1,952	2,240	1,889	6,081	-0.4	-2.0	+0.8	-0.6
1954-55.....	1,961	2,284	1,875	6,120	0.0	0.0	0.0	0.0
1953-54.....	1,847	2,235	1,814	5,896	-5.8	-2.2	-3.3	-3.7

¹ The States comprising the regions are listed in footnotes of Table 1.

² Includes, as available P_2O_5 , 2 percent of the colloidal phosphate and 3 percent of the phosphate rock marketed for direct application.

Table 2.—Est. Consumption of Classes of Materials for Direct Application in the U. S. and Territories, Year Ended June 30, 1956, with Comparisons

Class	Year Ended June 30,		Change From 1954-55
	1955	1956	
	1,000 tons	1,000 tons	Per-cent
Chemical nitrogen materials	3,500	3,262	-6.8
Natural organics.....	461	444	-3.6
Phosphates.....	2,233	2,469	+10.6
Potash Materials.....	401	393	-2.1
Secondary and trace nutrient materials.....	780	779	-0.2
Total.....	7,375	7,347	-0.4

cent) for K_2O from the respective consumptions in 1954-55.

Increases in the consumption of total primary nutrients, shown in five of the ten regions, were proportionately the greatest in the West South Central (7.4 per cent) and Pacific (5.7 per cent) areas. The largest decreases were in the West North Central (8.0 per cent) and Middle Atlantic (5.9 per cent) regions and the Territories (7.3 per cent). The use of nitrogen and P_2O_5 increased in five regions, and K_2O consumption increased in six regions. With the exception of K_2O , however, these increases did not offset fully the decreases that occurred in the other regions.

The consumption of primary plant nutrients supplied by mixed fertilizers is estimated to have been 4,275,000 tons, comprising 815,000 tons of nitrogen, 1,789,000 tons of available P_2O_5 , and 1,671,000 tons of K_2O . These quantities represent 12,000 tons (1.5 per cent) more nitrogen, 32,000 tons (1.8 per cent) less available P_2O_5 and 13,000 tons (0.8

Table 3.—Est. Consumption of Kinds of Chemical Nitrogen Products for Direct Application in the U. S. and Territories, Year Ended June 30, 1956, with Comparisons

Product	Year Ended June 30,		Change From 1954-55
	1955	1956	
	1,000 tons	1,000 tons	Per-cent
Ammonia, anhydrous...	354	431	+21.8
Ammonia, aqua.....	232	302	+30.2
Ammonium nitrate.....	1,115	930	-16.6
Ammonium nitrate—			
Limestone mixtures...	358	307	-14.3
Ammonium sulfate.....	520	411	-20.9
Calcium cyanamide.....	69	65	- 5.3
Calcium nitrate.....	56	61	+ 8.8
Nitrogen solutions....	109	108	- 0.6
Sodium nitrate.....	616	547	-11.2
Urea.....	68	92	+33.4
Other.....	3	8	—
Total.....	3,500	3,262	- 6.8

per cent) more K_2O than those in 1954-55. Materials used for direct application supplied 1,137,000 tons of nitrogen, 451,000 tons of available P_2O_5 and 218,000 tons of K_2O , representing decreases of 21,000 tons (1.8 per cent) for nitrogen and 12,000 tons (2.7 per cent) for available P_2O_5 and an increase of 1,000 tons (0.6 per cent) for K_2O as compared with 1954-55.

Total primary nutrients in all mixed fertilizers consumed in the United States and Territories averaged 29.0 per cent, as compared with 27.90 per cent in 1954-55. For all direct-application materials that supplied primary nutrients the corresponding averages were 27.5 and 27.86 per cent. ▲

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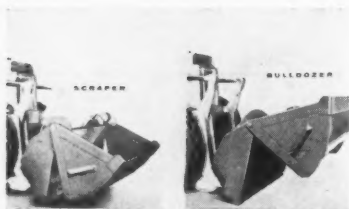
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Equipment & Supplies

Payloaders Available With '4-in-1' Bucket

The Frank G. Hough Co. has just announced that the entire line of four-wheel-drive Payloader tractor-shovels will now offer Drott "4-in-1" buckets as optional equipment.

The bucket is identified as



4-in-1 because it can be used as a shovel, as a clamshell, a scraper or as a bulldozer.

As a conventional tractor-shovel bucket it can be used to dig, carry and dump in the regular manner. The powerful clamshell action can be used to clean up small piles, to pick up material without tractor travel or to grasp and handle stumps, pipe, timbers, etc. With slight clam-lip opening it becomes a carry-all scraper that heap-loads itself, carries and spreads thin layers or dumps completely. With clam-lip fully open, it acts as a bulldozer with hydraulic fingertip blade-pitch con-

trol to regulate dozing depth and to discharge sticky material.

Additional information may be obtained if you

Circle 55 on Service Card

Bete Adds 14 Models To TF Nozzle Line

Fourteen new models have been added to Bete Fog Nozzle's line of spiral nozzles of Teflon. The firm reports that it is now possible to obtain full cone spray patterns, both wide angle (120°) and narrow angle (90°) in addition to hollow cone models.

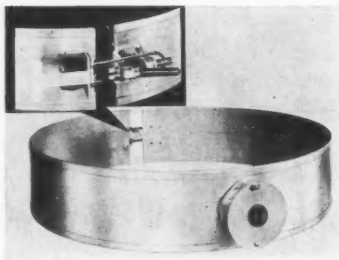
The complete line, called the TF series, now includes nozzles with orifices from 1/8" diameter to 1/2" diameter and with flow rates from 2 to 70 G.P.M. For more details on the TF series,

Circle 56 on Service Card

Acra Electric's New Drum Heater

A new drum heater for facilitating content removal from 55 gallon steel drums has been developed by the Acra Electric Corp.

Known as the RH-1 Acrawatt, the heater features a new toggle clamp (shown in inset) for fast



application and removal, and a built-in three-heat switch (lower right). Wiring circuits are said to assure uniform heating at either high, medium or low settings. It is available in capacities of either 3,000-Watts-230 volts or 2,500-Watts-115 volts. For more information

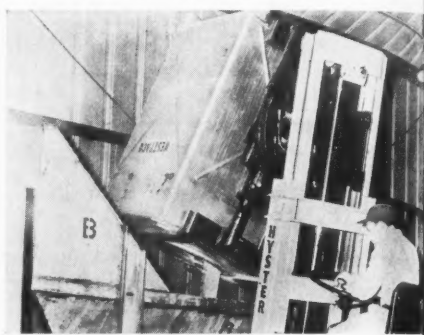
Circle 57 on Service Card

'Deltainer' Portable Steel Bin

A new portable steel bin for storage and shipment of granular or powdered materials has been announced jointly by Delta Tank Mfg. Co., Inc. and the Chemical Divisions of Food Machinery & Chemical Corp.

Tradenamed the "Deltainer," it forms the basis of FMC's Uni-Hopper system for shipping, Delta Tank reports.

The Deltainers are said to cut



Fork truck operator unloads a "Deltainer" shipping container.

packaging and storage costs and to provide an economical method of in-plant transportation. When shipped by truck or on specially designed freight cars, the bins are considered part of the carrying vehicle and thus qualified for transportation without freight charges on the bins.

For more details

Circle 58 on Service Card

MRM Liquid Filling Machine

Latest addition to the MRM Company's line of liquid filling machines is a semi-automatic 5-gallon filler in a choice of vacuum or gravity feed.

It is equipped with a double strand stainless steel chain conveyor with adjustable side rails. Containers come to a definite stop in front of the filling station which centers each container under a filling head. Spouts are air operated and so designed that a

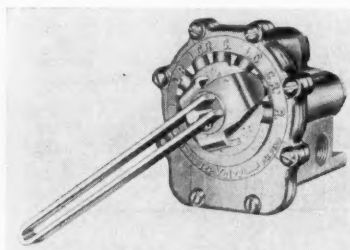
FARM CHEMICALS

wide variety of materials can be handled, the firm reports. When desired fill is accomplished, filling spouts are raised by air pressure.

For complete information,
Circle 59 on Service Card

Spraying Systems Introduces Tee Valve

With the new TeeValve, spray operation of the three standard sections of a spray boom is controlled easily and accurately, for maximum convenience of the



operator and economical use of chemicals, says Spraying Systems Co.

The TeeValve may be mounted within easy reach from the tractor seat. Seven indexed settings permit control of spraying with left, center or right boom sections, or any combination of these three sections. An outlet is provided for an auxiliary spray gun and connections for pressure gauge and pressure relief valve.

It is made in aluminum and stainless steel for use with almost all standard farm chemicals. Complete information on this unit may be had if you

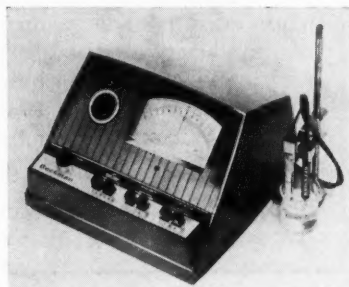
Circle 60 on Service Card

Beckman Push- Button pH Meter

Beckman Instruments, Inc. reports its new Zeromatic pH meter is an automatic push button instrument with drift-free amplifier which can be adapted for potentiometer recorder output, automatic temperature compensation and Karl Fischer titrations.

Featuring automatic correction for electronic zero drift and rapid

push button control, the Zeromatic has a 0 to 14 pH scale range and two millivolt ranges—700-0-



700 and extended 0-1400 millivolt range.

For additional data,
Circle 61 on Service Card

Schutte Booklet Describes Hammer Mill

A new bulletin describing the latest addition to its line of Heavy Duty Instant Screen Change Hammer Mills, the Model 68 with 20" feed opening and 75-100 hp range, has been published by Schutte Pulverizer Co.

Designed to handle a wide range of grinding operations, the unit features an instant change screen which can be inserted or removed safely while the mill is running.

For your copy of the bulletin
Circle 62 on Service Card

1957 New Leader



Highway Equipment Co. says its 1957 New Leader motor driven combination spreader affords a new convenience to the driver by its very accessible engine location.

A new direct drive from the engine direct to the distributor discs eliminates the use of chains, sprockets, idlers and some bearings, according to the manufacturer. For further information,

Circle 63 on Service Card

Hudson Introduces 'Foil-Wall' Bag

The first low-cost multiwall sack featuring aluminum foil laminated to kraft paper has just been added to its line, reports Hudson Pulp & Paper Corp. Named "Foil-Wall," it is being marketed on a regular order basis.

"This newest efficiency package is the best yet devised by the multiwall industry for products requiring maximum protection against moisture, odor and gases," said Dr. R. S. Hatch, Hudson vice president in charge of research and development.



A member of Hudson's Research Dept. separates plies of Foil-Wall sack.

"Combining the space and cost saving qualities of the multiwall sack with the protective qualities of aluminum foil has produced a sack in which shippers of chemicals, solid and semi-solid foods and plastics in the hygroscopic, deliquescent and anhydrous groups are already showing great interest," Hatch stated.

Suppliers' Briefs

Arkell & Smiths reports that modernization and expansion of the Wellsburg, W. Va. multiwall bag-making plant is almost completed. After new flooring was laid, flow of materials and sequence of operations were rearranged to improve efficiency and increase production. A new paper warehouse also has been constructed.

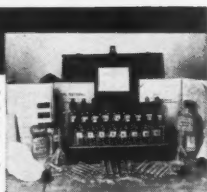
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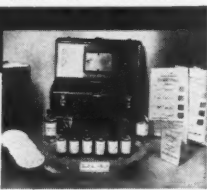
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Nitrates, Phosphorus and Potassium.
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leased a new 20,000 square-foot plant in Anaheim, Calif. John F. Bishop, general manager of the division, said that about 100 employees were to be transferred from the Fullerton headquarters in January.

Chase Bag Co. Managerial staff of its Southern sales region

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WANTED: Used 20 ton hopper trailer unit suitable for transporting phosphate rock and other fertilizer materials. Address "590," care **FARM CHEMICALS, 317 N. Broad St., Philadelphia 7.**

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FOR SALE: Aluminum 5 compartment Tanks 2700-3000 gal. formerly used as truck tanks. Oval shape. **Perry Equipment Corp., 1430 N. 6th St., Phila. 22, Pa.**

Nopco Chemical Co. announces appointment of Arthur M. Gladstone as technical manager of the Agricultural Chemicals Dept.

Union Bag-Camp Paper Corp. directors have approved a multi-million dollar expansion and modernization program for the firm's Savannah plant. Alexander Calder, chairman, said plans are to install a new paper machine and complete equipment for a new hardwood pulp mill. When completed, the facilities will boost the plant's daily pulp capacity by about 300 tons.

and New Orleans manufacturing plant recently was expanded.

J. H. Counce, southern regional sales director who also has functioned as manager of the New Orleans branch, will devote all of his time to direction of sales in the Southern region and D. H. Denholm, former chief industrial engineer for Chase Bag, has been appointed manager of its New Orleans plant.

Chemical Engineering Service, headed by R. W. Phillips, recently was organized as a division of Manitowoc Shipbuilding, Inc., Manitowoc, Wisc.

FARM CHEMICALS

by Dr. Melvin Nord

PATENT REVIEWS

Herbicide Ester

Compositions

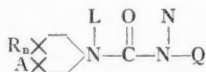
U. S. 2,761,733, issued Sept. 4, 1956 to William R. Davis and assigned to Pittsburgh Coke & Chemical Co., discloses a series of herbicide ester compositions which have the following properties: (1) very low vapor pressure, (2) high acid equivalency, (3) high solubility in conventional solvents, (4) capable of being stored for long periods of time without crystallization and if crystallization does occur readily redissolving at normal temperature, (5) soluble in oils of low aromatic content and (6) specific gravity of concentrated solutions about 1.0, so that stable aqueous emulsions may be prepared.

The compositions are mixtures of (1) esters of 2,4-D; 2,4,5-T; or 4-chloro-2-methylphenoxyacetic acid, and (2) a mixture of primary saturated decyl alcohols containing a major proportion of trimethyl heptanols.

U. S. 2,761,774, (same date, inventor, and assignee), the second component is a mixture of primary normal saturated C_7, C_8 , and C_9 alcohols and their 2-methyl isomers.

DuPont Assigned Herbicide Patent

U. S. 2,762,695, issued Sept. 11, 1956 to Henry J. Gerjovich and Rayner S. Johnson, assigned to E. I. du Pont de Nemours & Co., discloses a group of herbicide compounds having the formula



where A and R are hydrogen,

halogen, or alkyl (C1-C4), n is 1 or 2, L, M and Q are hydrogen, formyl, or aliphatic radical (C1-C4) — one and only one of L, M and Q being formyl, and one or both of the others being the aliphatic radical.

In U. S. 2,762,696 (same date, inventor, and assignee), another class of herbicides is disclosed, i.e. N-(carbonyl) amides having substantially the same general formula as above, except that acetyl take the place of formyl.

Defluorinating Phosphate Solutions

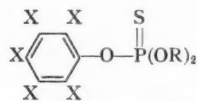
U. S. 2,761,775, issued Sept. 4, 1956 to Ira M. Le Baron and assigned to International Minerals & Chemical Corp., describes a process for the recovery of high percentages of defluorinated phosphate from phosphatic solutions in the form of mono- and di-calcium phosphate.

Superphosphate is extracted with an aqueous medium. The filtered phosphatic solution thus prepared is mixed with an allochthonous limestone of the calcarenite type, and maintained at about 50° C. for about an hour, during which time most of the calcium carbonate is dissolved and the fluorine is thrown out of solution as a solid phase material containing fluorine, phosphorus, and calcium. The solid phase constituents are removed from the resulting slurry, the filtrate containing about 0.04-0.10 per cent fluorine.

This filtrate is then mixed with quantities of calcium-bearing materials sufficient to precipitate the P_2O_5 content as predominantly di-calcium phosphate.

V-C Patent Discloses Nematocide Group

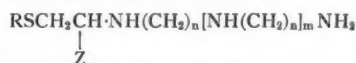
U. S. 2,761,806, issued Sept. 4, 1956 to William P. Boyer and assigned to Virginia-Carolina Chemical Corp., discloses a group of nematocides having the general formula



where R is an alkyl (C1-C4), at least one X is chlorine and one is hydrogen or methyl, the other X's being hydrogen or chlorine.

Doerr Issued Herbicide Patent

U. S. 2,762,697, issued Sept. 11, 1956 to Edward L. Doerr and assigned to Monsanto Chemical Co. discloses a new series of herbicides having the general formula



where R is alkyl (C1-C18), Z is hydrogen or methyl, n is 2 or 3, and m is O, 1, or 2.

New Insecticidal Agent

U. S. 2,761,805, issued Sept. 4, 1956 to Pedro M. Huidobro and Juan N. Escobar, discloses a method of preparing a new insecticidal agent by the combination of benzene hexachloride with terpene hydrocarbons derived from the treatment of turpentine with sulfuric acid (the terpenes consisting mainly of alpha pinene and polymerized alpha pinene).

According to the inventors, the product may be used to destroy agricultural plagues, as well as for other uses.

Fert. Manufacture And Uranium Recovery

U. S. 2,762,698, issued Sept. 11, 1956 to Marion D. Barnes and assigned to Monsanto Chemical Co. describes a process of pro-

... Patents

ducing water-soluble phosphate fertilizers, without using sulfuric acid or sulfur, and also recovering uranium from the phosphate rock.

Fig. 1 shows how monoammonium phosphate can be produced by this process. The process involves the two major phases of solubilizing the phosphate rock by fusion with a recycle mass of monoammonium phosphate, and transposing with ammonium carbonate the resulting calcium metaphosphate into monoammonium phosphate and calcium carbonate.

During the fusion step, the uranium in the rock is converted to uranyl metaphosphate and is carried over in the filtrate from the wash step 2. The uranyl metaphosphate can be separated from this filtrate, and the remainder of the water wash recycled to the fusion step. The separation can be accomplished by hydration (heating the water wash and acid solution) and increasing the pH to 1.5-4, thereby converting the soluble uranyl metaphosphate to insoluble uranyl ammonium phosphate, which precipitates out quantitatively.

Producing Ammon. Sulfate-Nitrate

U. S. 2,762,699, issued Sept. 11, 1956 to Walter Steinle and Fritz Exner, assigned to Bergwerks-gesellschaft Hibernia Aktiengesellschaft, provides a method of producing ammonium sulfate-nitrate.

In the usual process, it is necessary to use sulfuric acid of at least 77 per cent H_2SO_4 concentration, and nitric acid of at least 50 per cent HNO_3 in order to evaporate the water contained in them by means of the heat produced. Also, the ratio of the amounts of these acids is determined by the required concentration of at least 60 per cent $(NH_4)_2SO_4$ and at most 40 per cent NH_4NO_3 . The required ratio

between ammonia-nitrogen and nitrate-nitrogen can be maintained only with very accurate maintenance of the proper acid concentrations.

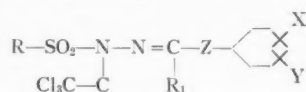
In the present invention, however, these difficulties are overcome by reacting the nitric acid and ammonia separately in a preliminary stage under vacuum, before adding the sulfuric acid in the saturator.

For example: In the preliminary stage, 59.0 tons of HNO_3 (50 per cent) and 8.5 tons of NH_3 gas gave 53.0 tons of ammonium nitrate lye (71.5 per cent). 15,000 Kg. of water was thereby evaporated. 59.5 tons of H_2SO_4 (78 per cent), 16.1 tons of NH_3 , and 53.0 tons of ammonium nitrate lye (71.5 per cent) were simultaneously fed into a saturator, which yielded 100 tons of ammonium sulfate-nitrate. In this process, 31,000,000 heat units were liberated and with 90 per cent efficiency 28,000,000 heat units remain usable. For the heating up and evaporation of 28,000 kg. of water, 18,000,000 heat units are needed, and with the residual 10,000,000 units the melt of salts can be heated up to $215^\circ C$., whereas in the conventional process the heat available is only enough to heat the molten salts to $150^\circ C$.

Thus, by the new process, it is possible to reduce the original acid concentrations and still reach the normal temperature of $150^\circ C$.

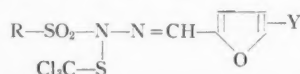
Acylated Hydrazone Compositions

U. S. 2,762,740, issued Sept. 11, 1956 to Alfred Margot and Hans Gysin, assigned to J. R. Gergy A.-G., discloses the use of acylated hydrazone compounds for the control of fungi. They have the general formula



where R is a lower alkyl or halogen alkyl radical; R_1 is hydrogen or a lower alkyl; X is hydrogen, halogen, methyl, or nitro; Y is hydrogen or halogen; and Z is the vinylene group $-CH=CH-$.

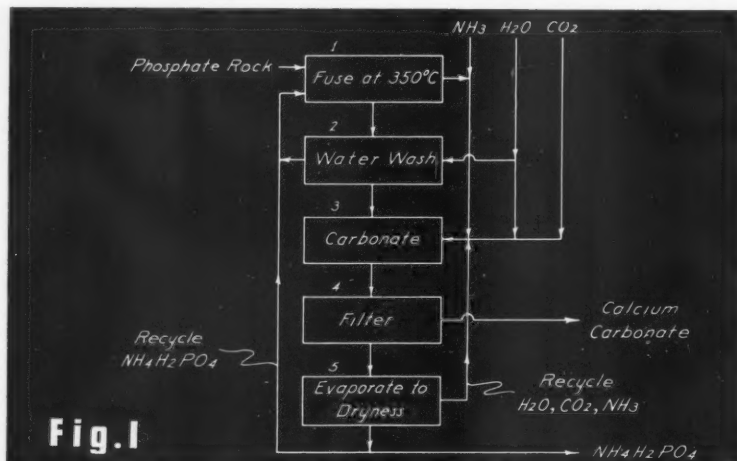
U. S. 2,762,741 (same date, inventor, and assignee) also discloses another series of fungicides



where R is a lower alkyl or monochloro-lower alkyl radical; and X is hydrogen, chlorine, bromine, or nitro.

Fungicide Patent Assigned Dow

U. S. 2,763,097, issued Sept. 18, 1956 to Lloyd J. Meuli and assigned to The Dow Chemical Co., describes a process of treating fungus-infected soil with halogenated 2-propanone compounds.



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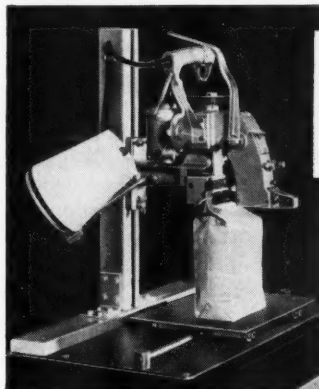
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Chemicals

DDVP Gains USDA Acceptance

DDVP (Dimethyl 2,2-Dichlorovinyl Phosphate), previously granted an experimental label by the USDA has now gained acceptance for usage in fly-baits and for control of Phorids in mushroom houses. Manufactured by Montrose Chemical of Newark, N. J., the chemical was discovered by Dr. George Pearce of the U. S. Public Health Service.

Report Tests on Systemic Insecticides

Disclosed recently at the National Cotton Council's Cotton Product on Conference was a report on the tests conducted throughout a 12 state area on systemic insecticides, as applied to cotton.

The two chemicals under test were Thimet and Bayer's compound No. 19639. It was found that the most effective method of applying the compounds to seeds was to combine the chemical with a 50-50 mix of carbon dust. Dosages of one pound were used to obtain control of thrips, aphids and spidermites. This control lasted 4-6 weeks.

In fields where aphids were a serious problem, treated plants produced around 40 per cent more

cotton per acre than the untreated plants.

Some of the disadvantages of the chemicals found in the survey were retardation in seed germination, and newly emerged plants appeared slightly affected by the chemicals. However, this was rarely carried over onto the leaves of the mature plant.

Naugatuck Reports Two New Chemicals

Naugatuck Chemical has announced two new experimental farm chemicals, one for blossom control and the other a pre-emergence herbicide.

Duraset (N-m-tolylphthalamic acid) is being sold as a fruit set compound, and currently is registered for use on lima beans. Reports indicate that yields can be increased up to 75 per cent. Costs are rather high on a per pound basis, but it is said to be economical on a cost per acre basis.

India Plans to Build DDT Plant

India's Ministry of Production has announced plans for the construction of a DDT plant at Alwaye, Kerala. Scheduled for completion in June of 1958, its capacity is slated at 1,400 tons per year. Hindustan Insecticides Ltd. will manage the operation, while Singmaster & Breyer (N. Y.) will be the engineers.

Tests With Silage

The effect of chemicals on silages was the basis of tests recently conducted at Iowa State College. When either sodium metabisulfite or Kylage is added to freshly cut legume-grass forage, they tend to preserve a little more of the edible dry matter, the amount of ammonia nitrogen is reduced, and the acidity of the resulting silage is slightly increased.

Spud Prod. Doubled With Fungicides

Potato yields can be doubled by seven spray applications with a good fungicide, according to field tests conducted last summer at the University of Minnesota. Potato plots sprayed seven times with zineb and DDT yielded 356 bushels per acre, while yields from plots sprayed only with DDT were 172 bushels. In plots sprayed with zineb, yield was 75 bushels more than those sprayed with copper fungicides.

The Minnesota experiments last summer also showed that seven spray applications with zineb, or maneb—another anti-blight chemical—resulted in about 50 bushels per acre more, on the average, than five applications. Each of the seven sprayings was applied after half an inch of rain had fallen since the previous spraying.

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Boll Weevil Hibernation Surveys

COOPERATIVE surveys to determine the number of cotton boll weevils going into hibernation during the fall of 1956 have been completed in several states. In Louisiana, Mississippi, North and South Carolina counts are below those of the previous year. However, with favorable weather conditions, sufficient numbers are in hibernation to be of concern early in the coming season. Counts in Virginia and Georgia are higher than in the fall of 1955 but are comparable with those in the other states.

Ground trash samples to be inspected to determine the number of live boll weevils in hibernation are collected near the edge of cotton fields. In most instances the states were divided into areas made up of one or more counties with similar ecological conditions. It had previously been determined that 90 samples obtained from such an area would give statistically sound information while at the same time reduce the amount of work required.

In Louisiana live weevils were found in nine of the 12 parishes from which samples were collected for a state average of 1344 weevils per acre of trash. This was only about one-seventh of the average count for the fall of 1955.

Louisiana was divided into four areas with the northeastern area consisting of East Carroll, Madison and Tensas parishes averaging 2596 live weevils per acre. Ground trash collected

near Tallulah, Madison parish showed an average of 2622 weevils per acre which was about one-fifth the number found in the fall of 1955 and slightly under the 20 year average of 2914 for that particular section. The north central area consisting of Richland, Morehouse and Ouachita Parishes, averaged 1255 per acre. The average in the northwestern area, Natchitoches, Bossier and Red River parishes, was 628 per acre; and in the south central area, St. Landry, Rapides and Avoyelles parishes, 528 live weevils per acre.

The average number of live boll weevils per acre of ground trash for the state of Mississippi was 2091 compared with the 5054 found in the fall of 1955. Collections were made in four areas of Mississippi. The lower delta area consisting of Sharkey, Issaquena, Yazoo and Humphreys counties averaged 2379 weevils per acre. The average in the central delta area, Washington, Bolivar, Sunflower and Leflore counties, was 1814 live weevils per acre. In the northdelta area, Coahoma, Tunica, Quitman and Panola counties, 2516 weevils per acre were found and in the hill area, Amite, Madison, Noxubee and Monroe counties, the count was 1655.

Five Areas Designated

Five areas were established in the combined states of South Carolina, North Carolina and Virginia for the boll weevil hibernation survey.

Area 1 which consisted of Orangeburg, Dorchester and Bamberg counties, South Carolina, had an average of 3712 live weevils per acre of trash.

Area 2, Darlington, Marlboro, and Florence counties, South Carolina and Scotland county, North Carolina, had an average of 8,635 live weevils per acre.

Area 3, consisting of Anderson, Greenville and Spartanburg counties, South Carolina and Mecklenburg, Cleveland and Union counties, North Carolina averaged 6,268 weevils per acre.

The average was 4,815 in Area 4; which was comprised of Nash, Wilson, Franklin and Edgecombe counties, North Carolina.

All counties, Southampton, Nansemond, Mecklenburg and Brunswick, which made up Area 5, were in Virginia. The average in this area was 4,169 live weevils per acre of ground trash.

For comparative purposes the 1956 fall counts in Florence County, South Carolina were 5,757, while in 1955 they were 11,398 per acre. In only three years since 1938 (1949, 1952 and 1955) have the counts in Florence county exceeded those for 1956. The average for the state of North Carolina in the fall of 1955 was 4,146 live weevils per acre and for Virginia was 1,476.

In Georgia hibernation counts were made in four areas with the state average being 1,936 live weevils per acre of ground trash as compared with 799 in the fall of 1955. This is also higher than the average of 1,169 per acre for the six years that records have been taken. The areas together with average counts are as follows: northwest (Gordon county) 2,904; north central (Spalding, Butts, Pike, Henry, and Lamas coun-

ties) 2,299; east central (Burke county) 774; and south (Tift county) 1,355 live weevils per acre.

Forty-four ground trash samples were processed from one area in Arkansas (Hempstead, Columbia and Nevada counties.) The average for this area was 989 live weevils per acre of trash. The 19-56 fall counts in Hempstead County were 1,398 per acre com-

pared with a count of 1,717 in the fall of 1955.

Grasshopper Outlook for 1957

Grasshopper surveys cooperatively by Federal and state entomologists to determine the outlook for 1957 have been compiled. In general, the situation is comparable to that expected in 1956

with an increase in the expected crop 'hopper in several states and only a slight increase in the expected rangeland problem but with a shift in the problems of several states.

North Dakota and Minnesota perhaps show the greatest increase of several states from a cropland problem. The expected problem, however, is up for the coming season over that expected in 1956 in Wisconsin, Iowa, Missouri and perhaps Kansas.

The number of acres of rangeland expected to have potential grasshopper problems is up only very little; 22,000,000 acres expected in 1957 compared with 20,000,000 acres in 1956.

The real picture though is the shift in states where the problems may be expected. Arizona, which in 1956 only expected trouble on about 140,000 acres of rangeland, has a potential acreage of over 2,500,000 expected this coming season. It might be pointed out that the Arizona problem in 1956, due to weather conditions, did not materialize until very late in the season with long-scale spraying programs going into the latter part of September.

The expected increase in Colorado is from about 770,000 in 1956 to slightly more than 1,000,000 acres this year. Kansas shows an increase from approximately 1,000,000 to 2,000,000 acres. Another state doubling the expected range acreage is Montana which increased from about 1,350,000 to slightly over 3,000,000.

New Mexico potential rangeland infestation remains about the same as for 1956; that is, 2,500,000 acres. The acreage in Oklahoma is down but is still a little over 1,000,000 acres. Texas potential infestation is only about one-half of that expected in 1956, but still over 4,800,000 acres could have a grasshopper problem in 1957.

As in the case of all insects weather factors play a decisive part in the development of expected infestations. ▲

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Statistics

German N Sales Continue to Rise

Germany experienced another year of exceptional sales in nitrogen exports. Exports for the year ending June 30 amounted to 293,000 tons as compared to 256,000 tons for 1954-55, and 190,000 tons for the preceding year 1953-54.

Indications are, however, that the rapid rise will be difficult to maintain, mainly due to increased competition from the United States. Sources state that the decrease in sales to the American market is based on the domestic nitrogen industry which was built up for strategic purposes.

Turning to more promising markets, the Chinese Peoples Republic appears to be one of poten-

tial. Sales to China occurred in 1952 through transit arrangements with the Netherlands, but now are under direct contracts. Sales with China last year amounted to 50,000 tons.

Two more nitrogen plants are expected to begin production this year. They will increase the proportion of synthetic nitrogen to 90 per cent of the total West German production.

Sulfur Production Gains Over '55

Sulfur production and consumption reached new highs in 1956 and exports of the yellow mineral held near the record levels of the past few years. Output of sulfur from all sources increased to an estimated 7,875,000 long tons, or 825,000 tons more than in 1955.

Consumption of sulfur in the

United States was estimated at 5,900,000 tons, compared with 5,650,000 tons in the previous year, and exports were expected to about equal 1,600,000 tons shipped in 1955.

U. S. Economy To Double By 1975

The Nation's economy by 1975 may be nearly twice that of 1953, if employment levels are well maintained. Growth of the economy will depend on expansion in demand and on potential output as determined by employment, hours worked and output per manhour. Recent trends in productivity and prospective growth in the labor force indicate that a doubling in the gross national product in the next quarter-century is highly possible for an expanding peacetime economy.

Production — October, 1956

Compiled from Government Sources

Chemical	Unit	October		September 1956
		1956	1955	
Ammonia, synth. anhydrous.....	s. tons	267,824	265,868	257,014
Ammonia liquor, coal & coke (NH ₃ Content) (Including diamm. phosphate & ammon. thio.).....	pounds	3,247,732	3,052,400	2,972,607
Ammonium nitrate, fert. grade (100% NH ₄ NO ₃).....	s. tons	144,282	149,723	138,086
Ammonium sulfate				
synthetic (technical).....	s. tons	94,622	93,069	93,462
coke oven by-prod.....	pounds	158,198,749	166,528,000	152,049,917
BHC (Hexachlorocyclohexane).....	pounds	6,112,666	3,700,511	6,164,005
Gamma content.....	pounds	1,011,709	846,355	1,040,016
Copper sulfate (gross).....	s. tons	4,952	6,507	4,792
DDT.....	pounds	10,948,824	10,273,183	11,911,632
2,4-D Acid.....	pounds	3,154,268	3,154,268	2,317,615
esters and salts.....	pounds	1,767,307	2,006,223	1,609,714
esters and salts (acid equiv.).....	pounds	1,371,666	1,628,446	1,141,828
Lead Arsenic (acid and basic).....	s. tons	2	2	2
Phosphoric acid (50% H ₃ PO ₄).....	s. tons	320,709	320,269	*289,747
Sulfur, Native (Frasch).....	l. tons	—	—	—
recovered.....	l. tons	—	—	—
Sulfuric acid, gross (100% H ₂ SO ₄).....	s. tons	1,380,389	1,354,538	1,272,072
Superphosphate (100% APA).....	s. tons	206,789	214,998	*170,533
Normal (100% APA).....	s. tons	123,967	141,457	98,278
Enriched (100% APA).....	s. tons	2	1,661	2
Concentrated (100% APA).....	s. tons	65,215	71,126	57,170
Wet Base (100% APA).....	s. tons	2	754	2
Other phos. fertilizers.....	s. tons	15,533	9,433	13,929
2,4,5-T Acid.....	pounds	433,691	—	410,283
Urea.....	pounds	70,097,979	—	67,434,480
Calcium Arsenate.....	s. tons	2	2	2

* Revised. ¹ Includes quantities for 1 plant previously not reporting. ² Withheld to avoid disclosing figures for individual establishments.

Fertilizer Materials Market

New York

January 21, 1957

Sulfate of Ammonia. Stocks are reported heavy at certain production points but a better movement is expected shortly as the shipping season gets under way. The export market has been rather slow, although there are numerous inquiries in the market particularly from the Far East.

Ammonium Nitrate. Producers report some movement of this material in the Midwest and at Southern points. Shipments are expected to increase shortly.

Urea. Some imported material continues to arrive at Atlantic ports in spite of the increased domestic production but this material is said to be going for special industrial purposes.

Nitrogenous Tankage. Demand for this material was slow at the present time and stocks in producers' hands are ample. Prices range from \$3 to \$4 per unit of ammonia (\$3.64 to \$4.86 per unit N), f.o.b. production points.

Castor Pomace. A limited amount of castor pomace was recently sold at \$45.50 per ton, f.o.b. production points, but this was cleaned up quickly with no further offerings reported. Production is at a very low point and is not expected to increase in the foreseeable future.

Organics. Little trading was reported in organic fertilizer materials with most materials such as tankage and blood staying in a narrow trading range. Last sales of tankage and blood were made at \$5 per unit of ammonia (\$6.08 per unit N), f.o.b. Eastern production points. Because of increased buying by the feed trade, soybean meal advanced several dollars per ton and material for

January shipment was rather scarce. Last sales were made on basis of \$49 per ton, f.o.b. Decatur, Ill., in bulk. Linseed meal advanced about \$2 per ton to \$64 per ton, f.o.b. Buffalo, N. Y. in bulk. Cottonseed meal was firm.

Fish Meal. A large shipment of imported fish meal arrived recently at Baltimore and was reported unsold. Fish meal was available for prompt shipment from several points at about \$138 per ton. Demand from the feed trade has been limited recently.

Bone Meal. A better demand was noted and the market ranges from \$60 to \$65 according to shipping point. Some imported feeding grade material recently arrived at Northern ports.

Hoofmeal. Scattered sales were reported at \$5.75 per unit of ammonia (\$6.99 per unit N), f.o.b. Chicago and demand only fair.

Superphosphate. This material is in ample supply and a better movement is looked for shortly. Triple is in demand in certain areas as the tendency toward higher analysis mixed goods continues. No price changes are reported.

Potash. Freight rates were increased slightly recently but no change in producers' list prices were noted. Shipments are going forward on contract and in a good many cases are behind last year.

Philadelphia

January 21, 1957

The movement in raw fertilizer materials has been slightly improved recently, but it is still a trifle early for the mixing season peak. However, since there is so much material in store, it is feared manufacturers may delay taking deliveries to a point where a shipping jam is created through which it will be difficult to get.

Prices generally are without much change. Tankage advanced in both Chicago and New York areas, and blood advanced also in Chicago, but held its own in New York area.

Sulfate of Ammonia. Price remains unchanged, but stocks continue to increase.

Nitrate of Ammonia. Situation remains same as previously reported. Movement is still slow and inventories are increasing.

Nitrate of Soda. Sufficient material is kept on hand to meet all probable requirements, and no change in prices is indicated.

Blood, Tankage, Bone. The situation is very quiet although the market is stronger than when we last reported. Tankage has since advanced 50 cents per unit ammonia to \$5.75 per unit (\$6.99 per unit N), Chicago, and 25 cents to \$4.75 per unit (\$5.77 per unit N), in New York area. Blood price is up 50 cents to \$5.50 per unit (\$6.68 per unit N), Chicago, but unchanged at \$5.25 per unit (\$6.38 per unit N), in New York area. Bone meal remains very quiet, and more or less nominal, at \$60.00 per ton.

Castor Pomace. A recent import arrival is said to have run the price up to \$45 per ton and over, but the supply was quickly cleaned up, and any quotation now would be strictly nominal, since there is no material available.

Fish Scrap. Supply is exceedingly limited and quotations are at about \$137 per ton for scrap and \$141 to \$143 for menhaden meal.

Superphosphate. There has been no change reported in the price of 88 cents to 91 cents per unit a.p.a., and stocks are large.

Potash. Market is very quiet and stocks remain quite ample. Price list still shows muriate at 38 cents per unit K₂O.

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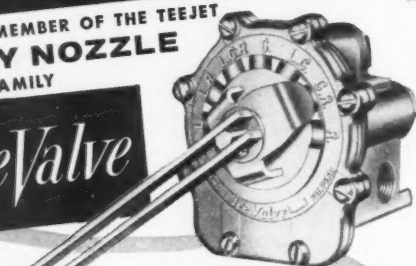
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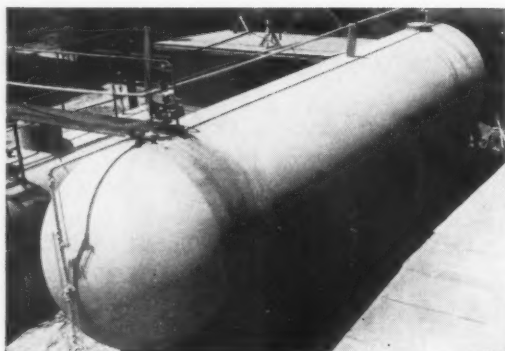
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1957 Grasshopper and Mormon Cricket Threat

A REPEAT OF 1956's grasshopper problem appears very likely this year, according to latest USDA reports. Both western and midwestern ranchers and farmers face very serious damage by the insects.

In addition to the grasshoppers, mormon crickets are on the upturn and trouble is expected to occur in half a dozen western states—particularly in Montana, Nevada and Wyoming.

Greatest grasshopper increases on cropland appear to be in Minnesota and North Dakota, but farmers in many Midwestern and Western states may find it necessary to apply control measures against the pests to avoid damage to cultivated crops. Grasshopper egg pods were found last fall in threatening concentrations on cropland in Montana, Idaho, Utah and New Mexico, and eastward through Arkansas, Missouri, Illinois, Indiana and Michigan.

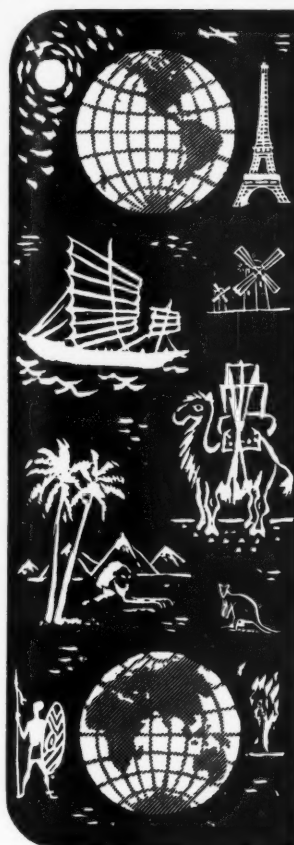
Infestation as shown on the recently released USDA Grasshopper map, for 1957 encompasses 22,190,280 acres in 19 Western and Midwestern states. Rangeland areas where grasshopper populations are likely to be highest are in the tri-state region of the Texas Panhandle, north Oklahoma and Kansas; in Montana; in a pocket along the Arizona-Mexico border and in California.

Far more infested rangeland acreage warranted control to suppress grasshoppers and Mormon crickets in 1956 than was actually treated under cooperative programs. More than 2 million acres of grasshopper infested rangeland were treated to prevent depredation. An estimated \$37 million in cash value of crops in 22 reporting states was lost in 1956 to grasshoppers and Mormon crickets, and almost \$38½ million was saved through voluntary and cooperative control activity.

Mormon crickets were building up their numbers in parts of Montana, Nevada and Wyoming with limited infestations also on rangeland in Idaho, Utah and Colorado. Areas requiring control for crickets in these states in 1957 total almost 474,000 acres.

Insecticides played an important part in controlling these plagues last year. Farmers kept damage to a minimum by applying sprays, dusts or baits to more than 4½ million acres. Chemicals which found wide usage were aldrin, dieldrin, toxaphene, heptachlor and sodium fluosilicate. In many areas where heat was a problem farmers used dieldrin, applying it by both ground and aircraft. ▲

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editorial

SEVERAL days ago I heard an expert on the subject of money make the somewhat cryptic remark that money always gets cheaper. If you think about this for a moment, it becomes almost obvious that money never does increase in value. But with this realization, come flashes of alarm, and you can't help asking yourself, "When will it stop?" "How can we stop it?" The latter question can best be tackled by first determining what tangible acts contribute to this perpetual loss of money value.

Henry B. duPont, vice president of duPont Company, in an address given on January 17 to the Louisville, Kentucky, Rotary Club, attacked presently existing proposals in Congress that, in my opinion, if they were to go unchecked, would have a hastening effect upon our ever decreasing money value.

These proposals call for taxing corporations at progressively higher rates so that the larger the company the higher the rate of tax it would have to pay on its earnings . . . a "discriminatory" tax legislation which would assess heavy penalties against large business enterprises.

"This," he said, "would be like saying that individuals who live in a large state should pay Federal taxes at a higher rate than those who live in a small state; that the three million people of Kentucky, for example, should pay a higher rate than the million people of Oregon . . . or that tall men should pay more than short!

"Industry naturally reacts unfavorably to being a special target, and the attitudes which special attacks reflect can not help but retard progress . . . they will slow down the rate of expansion and growth and, in so doing, militate against the interests of the country in each of its subdivisions everywhere."

The future prosperity of our nation is dependent on "a continuing flow of entirely new business—new business which will represent a net gain to the economy. The important thing is to build enterprise which augments the existing situation through the creation of opportunities which did not previously exist."

As examples of new industries which supplement, rather than replace, duPont cited the aircraft industry, electronics, commercial aviation, natural gas, plastics and other chemical developments, air conditioning, frozen foods and others.

"This is what we might call industrial pioneering—the opening up of new fields for development. Continuation and further expansion of this industrial pioneering is essential if our rapidly growing nation is to maintain and further improve its standards of living."

Taking strong issue with the view that growth of

large corporations in recent years prevents new enterprises from getting started, duPont said, "The fact is that thousands of new businesses are established each month and, while it is true that a number of them fail for one reason or another, we have had a net gain of a million, or about two thousand a week, in a ten year's period.

"The anticipated growth of the business establishment has already justified economists in predicting that, by 1977, the nation will have a total of almost six million business firms, a gain of about 40 per cent. It is expected that, by the close of this twenty-year period, there will be about one million, five hundred thousand more small business units than there are today and about twice as many large firms. So, throughout the country, if we are to keep up with the needs of our growing population, we will be obliged to create hundreds of thousands of new business ventures which, in the aggregate, will employ something like twenty million more people than are now engaged."

DuPont pointed out that "the great advance in industrial output has come through industrial pioneering. The technology we have developed makes the difference between abundance and want, between civilization and savagery, and, in some phases of history, between survival and destruction. It is the difference between the superhighway and the cow-path, between the comfort-filled, split level and the bare log cabin, between the eight-hour day and dawn to dusk toil, between nylon and homespun, between the deep freeze and the root cellar, between the oil burner and the pot-bellied stove.

FROM the very outset," duPont said, "our country has been developed by pioneering—first in the conquest of its mountains and its wilderness, then in developing its scientific and industrial potential. That potential assumes more enormous proportions every year if—and only if—industry is able to go on developing new technology and bringing it to the service of the country."

This pioneering will be effectively throttled by the present proposals of "discriminatory" corporate taxes. As duPont puts it, "Anything that penalizes the group must, in the end, penalize all participants; when we strike at the corporation, we strike at its stockholders, its employees, its customers—all three." If I may add a fourth, the general economic stability of the United States.

When will the decrease of our monetary value stop? How can we stop it? We can't do it in one fell swoop, but by reasonable disapproval of unreasonable tax proposals, we can de-accelerate our money value's downward trend. To have your congressman's name and Washington address at your fingertips can sometimes be a very useful convenience.

B. L. V.

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Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BULK TRANSPORTS

Baughman Mfg. Co., Jerseyville, Ill.
Highway Equipment Co., Cedar Rapids, Ia.

CALCIUM AMMONIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.
McIver & Son, Alex. M., Charleston, S. C.

CALCIUM ARSENATE

American Agricultural Chemical Co., N. Y. C.

CALCIUM NITRATE

Atkins, Kroll & Co., San Francisco, Calif.

CAR PULLERS

Stephens-Adamson Mfg. Co., Aurora, Ill.

CARS AND CART

Stedman Foundry and Machine Co., Aurora, Ind.

CASTOR POMACE

Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

CHEMISTS AND ASSAYERS

Shuey & Co., Inc., Savannah, Ga.

CHLOROBENZILATE

Geigy Agr. Chems. Div. Geigy Chem. Corp. N.Y.C.

CHLORDANE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Velsicol Chemical Corp., Chicago, Ill.

CLAY

Ashcraft-Wilkinson Co., Atlanta, Ga.

CONDITIONERS

Ashcraft-Wilkinson Co., Atlanta, Ga.
H. J. Baker & Bro., New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
National Lime & Stone Co., Finlay, Ohio
U. F. Graphite Co., Saginaw, Mich.

CONVEYORS

Baughman Mfg. Co., Jerseyville, Ill.
Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.
Finco Inc., North Aurora, Ill.
Joy Mfg. Co., Pittsburgh, Pa.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.

COPPER SULFATE

Phelps-Dodge Refining Corp., New York City
Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

DDT

Ashcraft-Wilkinson Co., Atlanta, Ga.
Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.
Monsanto Chem. Co., St. Louis, Mo.

DIAZINON

Geigy Agr. Chems. Geigy Chem. Corp., N.Y.C.

DIELDRIN

Ashcraft-Wilkinson Co., Atlanta, Ga.
Shell Chem. Corp., Agr. Chem. Div., N.Y.C.

DILUENTS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

DITHIOCARBAMATES

Berkshire Chemicals, New York City

ELEVATORS

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Stephens-Adamson Mfg. Co., Aurora, Ill.

ENDRIN

Shell Chem. Corp., Agr. Chem. Div., N.Y.C.
Velsicol Chemical Corp., Chicago, Ill.

ENGINEERS—Chemical and Industrial

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

FERTILIZER—Liquid

Clover Chemical Co., Pittsburgh, Pa.

FERTILIZER—MIXED

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.

FILLERS

Bradley & Baker, N. Y. C.

Fish SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

FULLER'S EARTH

Ashcraft-Wilkinson Co., Atlanta, Ga.

FUNGICIDES

American Agricultural Chemical Co., N. Y. C.
Berkshire Chemicals, New York City
Tennessee Corp., Atlanta, Ga.

HEPTACHLOR

Velsicol Chemical Corp., Chicago, Ill.

HERBICIDES

American Cyanamid Co., New York City
American Potash & Chemical Corp., Los Angeles, California
Monsanto Chem. Co., St. Louis, Mo.

HOPPERS & SPOUTS

Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES

American Agricultural Chemical Co., N. Y. C.
American Cyanamid Co., New York City
American Potash & Chemical Corp., Los Angeles, California
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Fairfield Chem. Div., Food Mach. & Chem. Corp., New York City
Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.
Pennsylvania Salt Mfg. Co., of Wash., Tacoma, Wash.
Shell Chem. Corp., Agr. Chem. Div., N.Y.C.
Velsicol Chemical Corp., Chicago, Ill.

IRON CHELATES

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.
Tennessee Corp., Atlanta, Ga.

IRON SULFATE

Tennessee Corp., Atlanta, Ga.

LABORATORY SERVICES

Wisc. Alumni Research Foundation, Madison, Wisc.

LEAD ARSENATE

American Agricultural Chemical Co., N.Y.C.

LIMESTONE

American Agricultural Chemical Co., N.Y.C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
National Lime & Stone Co., Finlay, Ohio

MACHINERY—Acid Making and Handling

Monarch Mfg. Works, Inc., Philadelphia, Pa.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Acidulating

Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Grinding and Pulverizing

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.
Bradley Pulverizer Co., Allentown, Pa.
Finco Inc., North Aurora, Ill.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

Buyers' Guide

MACHINERY—Material Handling

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.
Clark Equip. Co., Construction Mach. Div., Benton Harbor, Mich.
Finco Inc., North Aurora, Ill.
Hough, The Frank G. Co., Libertyville, Ill.
Joy Mfg. Co., Pittsburgh, Pa.
Link-Belt Co., Chicago, Ill.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora Ind.
Stephen-Adamson Mfg. Co., Aurora, Ill.
Sturtevant Mill Co., Boston, Mass.
Tractomotive Corp., Deerfield, Ill.

MACHINERY—Mixing and Blending

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.
Munson Mill Mach. Co., Utica, N. Y.
Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Mixing, Screening and Bagging

Poulsen Co., Los Angeles, Calif.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MACHINERY—Power Transmission

Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY

Superphosphate Manufacturing

Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

MALATHION

American Cyanamid Co., New York City

MAGNESIUM SULFATE

Berkshire Chemicals, New York City

MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

MANURE SALTS

Potash Co. of America, Washington, D. C.

METHOXYCHLOR

Geigy Agr. Chems., Div. Geigy Chem. Corp. N.Y.C.

MINOR ELEMENTS

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.
Tennessee Corporation, Atlanta, Ga.

MIXERS

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.
Munson Mill Mach. Co., Utica, N. Y.
Rapid Machinery Co., Marion, Iowa
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

NITRATE OF POTASH

Berkshire Chemicals, New York City

NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
McIver & Son, Alex. M., Charleston, S. C.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS

American Cyanamid Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Escambia Chem. Corp., Pensacola, Fla.
Lion Oil Company, El Dorado, Ark.
Mississippi River Chem. Co., St. Louis, Mo.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Sinclair Chemicals, Hammond, Ind.
Sohio Chemical Co., Lima, O.

NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Sons, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

PARATHION

American Cyanamid Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Monsanto Chem. Co., St. Louis, Mo.

PHOSPHATE ROCK

American Cyanamid Co., New York City
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.

PLANT CONSTRUCTION—Fertilizer and Acid

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.
Link-Belt Co., Chicago, Ill.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
National Potash Co., N. Y. C.
Potash Co. of America, Washington, D. C.
Southwest Potash Corp., New York City
United States Potash Co., N. Y. C.

POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.

PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

REPAIR PARTS AND CASTINGS

Stedman Foundry and Machine Co., Aurora, Ind.

SCALES—Including Automatic Baggers

Exact Weight Scale Co., Columbus, O.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS

Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans.
Finco Inc., North Aurora, Ill.
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.
Stedman Foundry and Machine Co., Aurora, Ind.
Sturtevant Mill Co., Boston, Mass.

SHOVEL LOADERS

Clark Equip. Co., Benton Harbor, Mich.
Hough, The Frank G. Co., Libertyville, Ill.
Tractomotive Corp., Deerfield, Ill.

SOILTEST EQUIPMENT

The Edwards Laboratory, Norwalk, O.

SPRAYERS

Finco, Inc., N. Aurora, Ill.

SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.
Baughman Mfg. Co., Jerseyville, Ill.

SPREADERS, TRUCK

Baughman Manufacturing Co., Jerseyville, Ill.
Highway Equipment Co., Cedar Rapids, Ia.

STORAGE TANKS

Cole, R. D., Manufacturing Co., Newnan, Ga.

SULFATE OF AMMONIA

American Cyanamid Co., New York City
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Phillips Chemical Co., Bartlesville, Okla.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TANKS—NH3 and Liquid N

Cole, R. D., Manufacturing Co., Newnan, Ga.

TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.

TRUCKS—SPREADER

Baughman Mfg. Co., Jerseyville, Ill.
Highway Equipment Co., Cedar Rapids, Ia.

UREA & UREA PRODUCTS

Atkins, Kroll & Co., San Francisco, Calif.
Bradley & Baker, N. Y. C.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Sohio Chemical Co., Lima, O.

UREA-FORM

Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

FARM CHEMICALS



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The potash of today should not be the potash of yesterday.
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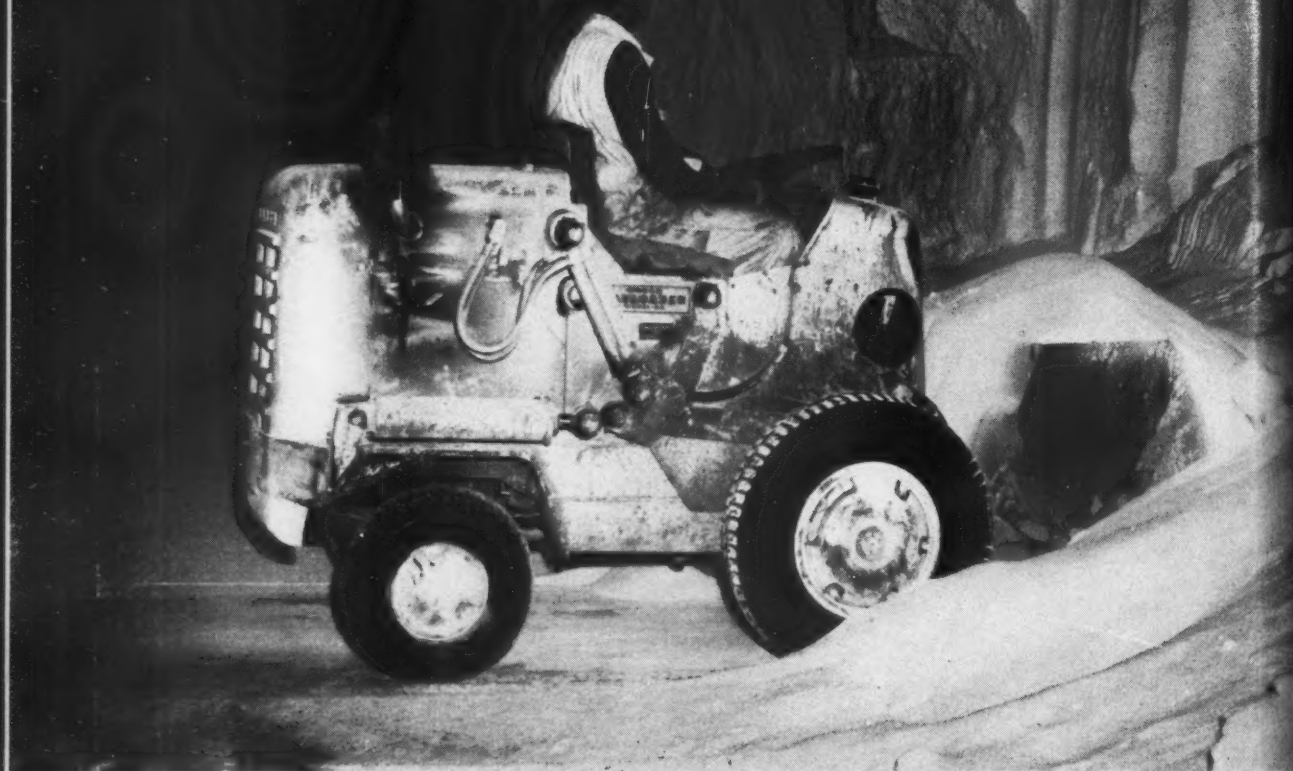
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Southern Sales Office . . . Candler Building, Atlanta, Ga.

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